the OIL AND GAS JOURNAL

Rates: Domestic, 1 year, $6.00; 6 months, $3.00. Canadian and foreign, 1 year, $7.00; 6 months, $3.50. All subscriptions are payable in advance

OCTOBER 15, 1936
VOL. 35, NO. 22

Extra copies of special issues are reserved for subscribers' needs and may be purchased by subscribers at the price of 50 cents per copy

TABLE OF CONTENTS

News Developments

Summary of Situation 27
Sparks From the News 28
Estimates of Demand are Overhauled—By HUGH D. MALLON 29
Crude Oil and Refinery Situation—First Eight Months 30
Big Companies Stage Leasing Play in Illinois—By R. H. WHITNEY, Jr. 31
Exploration for Deeper Oil Speeds Coastal Drilling—By NEIL WILLIAMS 33
Research Program Favored by Road Oil Congress—By W. T. ZIEGENHAIN 35
Natural Gas News and Refinery Projects 36
Pipe Line Activity and Natural Gas 37
Vigorous Discussion at A.I.M.E. Meeting in Fort Worth—By L. E. BREDBERG 43
Service Stations Reduce Motoring Perils 45
News From Foreign Lands 47
Editorial 48

Rodessa Section

Potential Structures in North Louisiana—By MITCHELL TUCKER 66
Natural Gas, Carbon Black and Gasoline Expansion 68
Crude Produced in Rodessa is Typical Paraffin Base Oil—By A. W. TRUSTY 72
North Louisiana Stratigraphy Gradually Being Worked Out—By A. F. CRIDER 74
Rodessa Drilling Practice 77
Intensive Seismic Exploration in North Louisiana District—By JOSIAH TAYLOR 79
Increase in Runs Follows Opening of Rodessa Field—By D. H. STORMONT 84
North Louisiana Mud Problems Found in Deeper Well Drilling—By J. W. O'BRIEN 86
Cooperative Core Correlation Adopted by Shreveport Companies 106
Rodessa Pool Quickly Served by Six Trunk Pipe Lines 110
Service on New Fields, Rodessa, La.-Tex. ..... 115 and 118
Map of Rodessa Area 116-117

A. I. M. E. Papers

Cooperative Development Plan for Buena Vista Oil and Gas Field—By C. M. NICKERSON 120
Estimation of Oil and Gas Reserves—By R. L. HUNTINGTON 124
Bottom-Hole Pressure Used in Determining Well Capacity—By MORRIS MUSKAT 128
Pressure-Controlled Completions are Not Necessarily High-Pressure Operations—By JOHN O. FARMER 131

Engineering—Operating

Gulf Increasing Line Capacity, Adding Loops and Equipment—By PAUL REED 50
Construction of New Refinery in Uruguay Well Under Way 52
New Barnsdall Unit Featured by Operation Economy—By W. T. ZIEGENHAIN 55
Operating Ideas 57
Motor Fuel From the Catalytic Treatment of Cracked Gases—By GUSTAV EGLOFF 58
Technical Questions—By C. K. FRANCIS, Ph. D. 63
Problems From Readers—By L. G. E. BIGNELL 64

Field Operations

Field Operations Summarized 137
Eastern Fields—By STAFF CORRESPONDENT 138
Southwest Texas—By GEORGE WEBER 139
Central West—By GEORGE A. WHITNEY 140
Gulf Coast—By L. F. SINGLETON 141-152
Rocky Mountain Area—By TOLBERT R. INGRAM 142
Oklahoma—By DAL DALRYMPLE 146
Michigan—By PAUL A. ELLIOTT 149
East Texas—By L. E. BREDBERG 151
Kansas—By DAL DALRYMPLE 153
West and North Texas—By L. E. BREDBERG 155
California—By L. P. STOCKMAN 157
Canada—By VICTOR LAURISTON 160
N. Louisiana-Arkansas—By MITCHELL TUCKER 161
Wildcat Operations ..... 163 to 171

Markets and Prices

Group 3 Market—By T. F. SMILEY 174
New York Market—By H. STANLEY NORMAN 175
A.P.I. Refinery Report 175
Tank-wagon Markets 176
Refinery Prices 177
Crude Prices 178

Additional Features

Personal Paragraphs 172-173
Record of Oil Securities 179
New and Improved Equipment 180-181
Classified Advertising 182-183
Oil Man's Calendar 184
Index to Advertisers 184

Copyright, 1936, by The Petroleum Publishing Co.

THE UNIVERSITY OF NEBRASKA DEPARTMENT OF GEOLOGY

Flows Better–Sets Slower –Hardens Thoroughly!

ANNOUNCING

UNAFLO

FOR SAFE DEEP-WELL CEMENTING AT HIGH TEMPERATURES

THE oil industry has long needed a safety factor in cement. An easier-flowing, slower-setting cement which, when placed, forms a casing seal of extremely high density and impermeable character—*and performs like this under the pressure and high temperature of deep-well jobs.*

Unaflo fits these needs to a T. It has been thoroughly proved under severe on-the-job tests.

Read the ten points below which cover the most important characteristics of **Unaflo.** See if this new cement, specially developed for deep-well cementing—for wells where high temperatures exist—and for well repair work—doesn't measure up to what you think an oil well cement *should* be!

Try Unaflo on your next job

A new-type oil well cement—developed after years of research—proved in the field—Unaflo is a product of the world's largest manufacturer of cement.

1 Gives you more time to get it down. Unaflo remains easily pumpable under extreme well conditions, such as high temperatures and enforced delays.

2 Remains fluid. Can be pumped back of casing as a dense cement slurry. It is not necessary to jet Unaflo back of casing as a washed cement.

3 Follows irregularities of well bore and casing. Unaflo slurry is a fluid—not a paste.

4 Hardens thoroughly with high density after it is placed. Unaflo slurry remains a dense fluid until attaining initial set.

5 Displaces contaminating element in the well. It is possible to pump Unaflo with low water-cement ratios, thus mix does not mingle with contaminating elements in the well but displaces them.

6 Not stiffened by mud contamination.

7 Not stiffened by salt water contamination.

8 Sets in sulphate water.

9 Requires no ice.

10 Provides an ideal, highly workable slurry for squeeze, plug-back, and other underground well repair work. Makes it safe to reverse circulation and wash out excess cement.

UNIVERSAL ATLAS CEMENT CO.

United States Steel *Corporation Subsidiary*

AMICABLE BUILDING, WACO, TEXAS

KANSAS CITY • TULSA • OKLAHOMA CITY

Output Again Over Three Million Level

NATIONAL crude oil production passed the 3,000,000-barrel daily mark again last week as most of the principal oil producing states increased their output over the previous week. Texas and California production was the highest in several weeks and Oklahoma added 15,850 barrels daily. Kansas with a decline for the week continues below the state allowable.

The meeting of the Interstate Oil Compact group with representatives of the Bureau of Mines at Washington relative to the monthly estimates of demand for crude oil did not result in agreements of immediate importance. Studies are to be made by the bureau including the important consideration of whether or not crude stocks above ground have reached an economic minimum. These investigations may have some bearing on later estimates of current crude requirements.

In the meanwhile, last week's production of 3,029,593 barrels daily was 187,293 barrels greater than bureau's recommendation for October. The bureau's figure provided for a reduction of 80,000 barrels daily in crude stocks. Statisticians are pointing out that if the bureau's estimate is correct, the industry should be running approximately 100,000 barrels of crude to storage daily. Available information indicates that crude stocks are still being lowered following the heavy withdrawals during September. These comparisons reflect differences between the government's estimates and actual demand that have been apparent for several months. These variations have been the basis for the contention of some that the former must be revised upward.

Production 3,029,593
Increase 37,538

On October 16 the Oklahoma Corporation Commission is scheduled to hold a hearing at Oklahoma City on a petition which calls for an increase of 50,000 barrels daily in Oklahoma allowable and on October 19 the Texas Railroad Commission will conduct a hearing which probably will determine whether the present state allowable be continued over the remainder of the month. Most crude buyers state that the crude supply and demand in the Southwestern states is in balance due to the fact that there has not been any general reduction in refinery requirements. It is felt however that within the next 15 to 30 days this situation will change.

Apart from the immediate statistical situation, recent developments indicate that Texas and Louisiana will have additional outlets for its crude next year to the north. Major crude buyers which supply pipe lines connecting Oklahoma and Kansas fields to Middle Western and Canadian refineries will need more crude in 1937 and it is not certain that present fields can supply it. Preliminary plans have been made to use lines now going south out of Oklahoma in transporting crude north from Louisiana and Texas.

Daily Average Production for Week

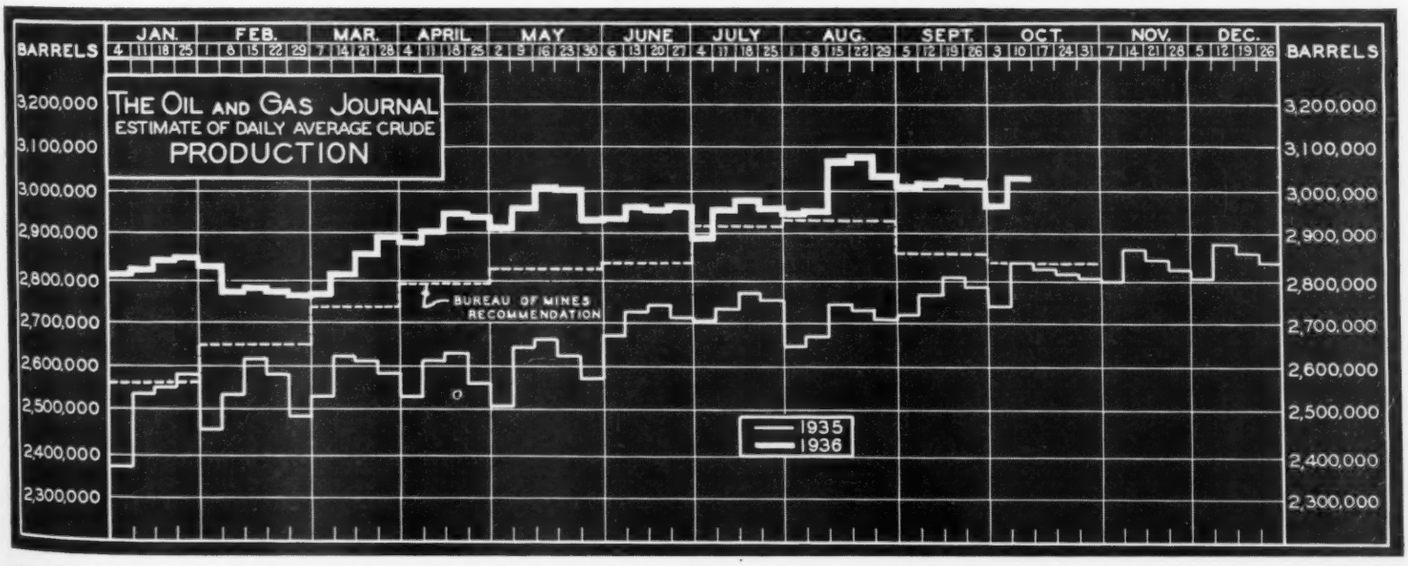
	Oct. 10, 1936	Bur.Mines Oct. est.	Oct.State allowable	Oct. 3, 1936
Oklahoma City	148,300	.....	.....	131,950
Seminole-St. Louis	91,925	.....	.....	93,150
Remainder of State	323,150	.....	.....	322,425
Total Oklahoma	563,375	559,900	559,900	547,525
East Texas	445,198	.....	.....	444,036
West Texas	177,145	.....	.....	172,345
North Central Texas	89,896	.....	.....	88,512
Texas Panhandle	58,448	.....	.....	61,294
East Central Texas	68,947	.....	.....	70,787
Gulf Coast—Texas	257,749	.....	.....	255,361
Southwest Texas	84,339	.....	.....	84,349
Total State of Texas	1,181,722	1,106,900	1,179,948	1,176,684
North Louisiana	77,970	.....	.....	77,990
Gulf Coast—Louisiana	156,897	.....	.....	157,695
Total Louisiana	234,867	189,300	235,200	235,685
Santa Fe Springs	45,250	.....	.....	42,750
Long Beach	66,100	.....	.....	65,250
Kettleman Hills	77,650	.....	.....	78,100
Remainder of State	400,500	.....	.....	378,150
Total California	589,500	535,300	*544,000	564,250
Kansas	149,400	155,000	155,000	157,800
Arkansas	28,185	29,600	.....	28,225
Eastern fields	113,100	106,300	.....	112,900
Michigan	29,184	30,000	.....	29,736
Southeastern New Mexico	77,730	73,100	80,055	76,120
Rocky Mountain area	62,530	56,900	.....	63,130
Total United States	3,029,593	2,842,300	.....	2,992,055

*Recommendation of the Central Committee of California Oil Producers.

Crude Oil Stocks in United States

(BUREAU OF MINES ESTIMATE)

Week ending October 3, 1936	294,349,000
Week ending September 26, 1936	294,568,000
Week ending October 5, 1935	320,233,000



SPARKS FROM THE NEWS

Generosity!

With a consistent record of dry holes by its own nationals, Great Britain announces American interests may try their hand.

Speed Era

Projection of oil demand over six-month periods will be of little value to those producers who think of tomorrow as ancient history.

Sure Sign

A political campaign is drawing to a close when each party accuses the other of selling out to the oil industry.

Reserves Reversed

Two important California wildcats are dry. They add nothing to oil reserves and reduced reserves of owners $2,000,000.

Good Lesson

The policy of cash or limited credit by cooperatives should be a tip to the independent jobbers and dealers competing with them.

More Barrelage

Oil business has direct interest in proposal to build diesel-motored merchant marine.

Gasoline Drought

North and South Dakotas are the only states in which gasoline demand is behind last year's, indicating effect of drought is confined to small area.

1936

Reciprocity

Oil refiners who pay for highways in form of gasoline taxes should also pave more of them with their asphalts.

Best Yet

Cabinet member says Interstate Oil Compact is a "dead horse." The fact still remains that industry has made greater progress under it than any of the cure-alls that preceded it.

1890

Their Turn

The refiner who used to tell the natural gasoline manufacturers how to run their business now listens.

Hindsight

Owners of 25 per cent of Rodessa wells which will not produce their allowables wish that they had the natural gas from that field which is now part of the atmosphere.

Shift

Reports indicate that certain pipe lines operating south out of Oklahoma into Texas and Louisiana will be reversed next year.

Vital Factors

Nearness to market and normal outlets as well as potentials have to be considered in field allowables.

Double Play

Reports at Atlantic City meeting of National Safety Council reflect fact that oil industry has been made exceptionally safe as well as efficient.

Estimates of Demand Are Overhauled

By HUGH D. MALLON

"At Des Moines the president asked: 'Well, how is the oil states compact idea working out?' Governor Landon's answer was pretty much like this: 'Mr. President, I was not originally in favor of the oil states compact idea. But we got into it and I now believe that the present good condition of the oil industry is due to the efforts of the compact'."—GOVERNOR MARLAND.

WASHINGTON, D. C., Oct. 12.—Three factors in estimating crude oil requirements presented by Chairman E. O. Thompson of the Interstate Oil Compact Commission, are being considered by the Bureau of Mines after a conference here Saturday. These are: Expanding the period covered by the bureau's estimates from one month to six months; taking into account not only gasoline demand but fuel oil and other products; and reviewing the question of adequate crude stocks.

The bureau refused to take potential production capacity into consideration in making monthly estimates of crude demand.

This was the outcome of the conference between Chairman Thompson and representatives of the compact commission, authorized at the recent meeting in Oklahoma City, and representatives of the Bureau of Mines concerned in the monthly estimates of crude requirements which offer a basis for state allowables.

There was considerable comment here among those attending the meeting regarding the statement of Secretary of Interior Ickes at a press conference earlier in the week having to do with the supposed attitude of Governor Landon toward the oil compact. Mr. Ickes quoted a statement alleged to have been made by Mr. Landon which indicated that the Kansas governor did not think well of the compact.

Before the conference opened here Oklahoma representatives quoted Governor Marland as to what took place at the governors' conference at Des Moines last summer. This statement, which involved a reply to a question of President Roosevelt by Governor Landon, clearly showed that the latter now favors the compact regardless of what may have been his earlier position when the compact was first discussed. It was pointed out in this connection that Kansas, despite a large increase in its potential oil production over the past year, has contributed its part in preventing overproduction by supporting the program of the commission.

The question of the various factors considered by the Bureau of Mines in arriving at its forecast figures was discussed by the conferees, and it was the impression of the compact officials too much weight was given to the market demand for gasoline and not enough attention paid to other products in the bureau's computations. With winter coming much more attention will, of necessity, have to be given to the production of fuel oil, while the use of gasoline stocks as a basing figure in forecasting cannot be accurately continued during this season, the commission representatives said.

In this connection one of the bureau officials is reported to have remarked that too much importance should not be placed upon the fuel oil market because, if the price went up a little, users of fuel oil would turn to coal. This feeling, however, was not the general opinion of the bureau officials, all of whom listened attentively and sympathetically to the compact commission's suggestions.

The question of whether market demand figures issued by the bureau in the past have been too low was discussed at length, but nothing definite was decided. It was, however, recognized that if other factors than gasoline stocks were given more consideration in computing the probable future demand for crude the result would be increased crude forecasts.

Expressing the belief that Texas has not been getting its proportionate share of the national market under the monthly forecasts of the Bureau of Mines, Chairman Thompson presented figures to the conference to show that, according to potential production by states, Texas is being allotted less than 5 per cent of its potential, while all but one other oil-producing state is being allotted over five times that average of their daily potential production. It is on this basis that Colonel Thompson feels the monthly estimate of the Bureau of Mines for his state should be increased.

What consideration the bureau gave to demand for various classes and grades of crude oil in its recommendations for withdrawal of crude from storage also came in for discussion, the compact representatives being of opinion the demand for different grades of crude would have a material effect on the national figure. Withdrawals of heavy crude during one forecast period and of light crudes during the next, would not, if grouped together, give a complete picture of what might happen during the third period. On the other hand, there might be an actual shortage of some grades of crude and a surplus of others which would not and could not be accurately judged, nor could its effect on the industry be accurately predicted.

It is probable this question, as well as the question of what are adequate crude oil stocks, will not be decided until after the Bureau of Mines completes its work of analyzing and gauging crude oil now in storage. An early decision by the bureau is expected on the request for a six-months forecast, as well as on the request for higher recommendations for some of the states and greater consideration of the fuel oil necessities of the nation in arriving at the total.

Those representing the compact commission were: Col. E. O. Thompson, chairman; W. Bell, of Illinois; Marvin Lee, of Kansas; and Charles C. Brown, of Oklahoma. The Bureau of Mines was

"I've never believed in the compact idea. You can not operate under it. I endorse what Governor Landon said—it is the deadest of all dead horses. After all, the Bureau of Mines is about as impartial an umpire as you can get. We are not playing favorites."—SECRETARY ICKES.

represented by Joseph Hedges, assistant to the director; George White, chief economist, Petroleum Economics Division, and G. R. Hopkins, assistant chief economist.

Colonel Thompson in an interview said:

"It is time to give consideration to whether we have reached the economic limit below which we should not further reduce storage stocks, and constitutes the element of the small producer. For several weeks withdrawals from stocks have been 2,000,000 bbls. a week and last week the withdrawals were 3,000,000 bbls. It has become a question of serious consideration whether production curtailment has been and is too rapid.

"We will lay the Texas program on six months' basis before every operator, banker and investor in the state lending money on drilling operations, so the amount of needed production may be accurately known. Also it will enable developers and producers to regulate their drilling of new wells.

"The compact is working so well the threat of federal control of the oil industry is removed, notwithstanding intimation from the Secretary of the Interior, Mr. Ickes. At their recent meeting in Des Moines, I understand Governor Landon of Kansas told President Roosevelt the compact is working fine. Some of those in congress who had been working for federal control are now convinced that the compact is a success."

Despite Colonel Thompson's opinion, legislation proposing revival of federal control over production and marketing of crude oil will be proposed to President Roosevelt and the next congress by Secretary of Interior Ickes, it was stated by authoritative sources.

AUSTIN, Tex., Oct. 12.—The railroad commission has changed the date for its next general proration hearing from October 14 to October 19 to give more time for assembly of data on market demand.

The order called for nominations for months from November, 1936, to April, 1937, inclusive, in accordance with plans for a long range forecast as to market requirements.

It specified the nominations should be definite for November and "as definite a forecast as is possible" for the succeeding months. They must be filed by October 15.

Gasoline Tax Assessments in California Show Increase

SACRAMENTO, Calif., Oct. 12.—Gasoline tax assessments for August totaled $4,155,055.57, F. E. Stewart, member of the State Board of Equalization, announced here today upon the completion of the assessments of the tax of 3 cents a gallon on motor vehicle fuel sold during that month.

During August, 139,900,854.3 gallons of motor vehicle fuel were sold, as compared with 128,854,043.3 gallons sold during the corresponding month of 1935, said Stewart in commenting upon the tax assessments. The increased gallonage resulted in an additional tax of $328,090.36 over the assessed for the month of August, 1935.

The increase in the tax assessments of 8.57 per cent over the assessments for August, 1935, continued Stewart, indicates a continuance of the better business conditions which have been reflected in the increased gasoline tax assessments of recent months.

Ten oil companies reporting the largest gallonage sales in August are listed below. The resale of gasoline, previously taxed, and exempt sales to the federal government or in interstate or foreign commerce account for the differences between total sales and taxable sales.

	Gallons actually sold	Net taxable gallonage
Associated Oil Co.	17,455,455	9,772,759
General Petroleum Corp. of Cal.	35,364,209	4,455,239
Gilmore Oil Co.	6,720,696	209,438
Richfield Oil Co. of Cal.	15,412,524	10,626,211
Shell Oil Co.	38,281,370	18,353,494
Signal Oil Co.	6,289,013	4,014
Standard Oil Co. of Cal.	62,989,881	29,269,935
Texas Co.	13,906,696	7,326,648
Union Oil Co. of Cal.	16,738,929	15,444,700
Wilshire Oil Co., Inc.	6,488,874	6,544,383

Aids to Cooperatives

WASHINGTON, D. C., Oct. 12.—A committee of the Chamber of Commerce of the United States has demanded that governmental agencies abolish preferential treatment in tax exemptions, financing and other aid to consumers' cooperatives and treat all business alike.

The committee, headed by Clem D. Johnson of Roanoke, Va., made its report to the chamber's board of directors after a study of cooperatives and their potential effect on private enterprise.

Crude Oil and Refinery Situation Summarized — First Eight Months

Supply and Demand—Crude Oil (Bbls.)

First 8 months—	Total supply	Total demand	Excess Demand	Excess Pct.	Domestic production	Imports	Indicated domestic demand‡	Exports	Stocks refinable crude August 31
1936	744,237,000	757,111,000	12,874,000	1.7	723,079,000	21,158,000	724,471,000	32,640,000	301,757,000
1935	667,762,000	680,050,000	12,288,000	1.8	646,486,000	21,276,000	646,840,000	33,210,000	324,966,000
Increase, 1936	76,475,000	77,061,000	.....	...	76,593,000	†118,000	77,631,000	†570,000	†23,209,000
Increase, 1936	11.5%	11.3%	.....	...	11.8%	†0.6%	12.0%	†1.7%	†7.1%

Supply and Demand—Refinery Products—Motor Fuels (Bbls.)

First 8 months—	Total supply	Total demand	Excess Demand	Excess Pct.	Domestic production	Imports	Domestic demand	Exports	Stocks August 31§
1936	336,186,000	331,838,000	*4,348,000	*1.3	336,186,000	.....	313,680,000	18,158,000	65,149,000
1935	302,007,000	302,244,000	237,000	0.1	301,987,000	20,000	283,603,000	18,641,000	51,510,000
Increase, 1936	34,179,000	29,594,000	.....	...	34,199,000	†20,000	30,077,000	†483,000	13,639,000
Increase, 1936	11.3%	9.8%	.....	...	11.3%	†100.0%	10.6%	†2.6%	26.5%
Kerosene									
1936	36,655,000	35,880,000	*775,000	*2.2	36,654,000	1,000	31,713,000	4,167,000	8,690,000
1935	36,835,000	33,835,000	*3,000,000	*8.9	36,835,000	.....	29,435,000	4,400,000	9,398,000
Increase, 1936	†180,000	2,045,000	.....	...	†181,000	1,000	2,278,000	†233,000	†708,000
Increase, 1936	†0.5%	6.0%	.....	...	†0.5%	.....	7.7%	†5.3%	†7.5%
Gas Oil and Fuel Oil									
1936	291,563,000	282,698,000	*8,865,000	*3.1	279,786,000	11,777,000	260,312,000	22,386,000	112,849,000
1935	248,477,000	249,592,000	1,115,000	0.4	234,462,000	14,015,000	232,801,000	16,791,000	109,282,000
Increase, 1936	43,086,000	33,106,000	.....	...	45,324,000	†2,238,000	27,511,000	5,595,000	3,567,000
Increase, 1936	17.3%	13.3%	.....	...	19.3%	†16.0%	11.8%	33.3%	3.3%
Lubricating Oils									
1936	20,288,000	20,583,000	295,000	1.5	20,286,000	2,000	14,947,000	5,636,000	6,730,000
1935	18,014,000	18,696,000	682,000	3.8	18,014,000	.....	13,072,000	5,624,000	6,649,000
Increase, 1936	2,274,000	1,887,000	.....	...	2,272,000	2,000	1,875,000	12,000	81,000
Increase, 1936	12.6%	10.1%	.....	...	12.6%	.....	14.3%	0.2%	1.2%
Petroleum Wax (Lbs.)									
1936	322,581,000	320,368,000	*2,213,000	*0.7	311,640,000	10,941,000	201,462,000	118,906,000	116,888,000
1935	309,235,000	308,725,000	*510,000	*0.2	292,600,000	16,635,000	169,424,000	139,301,000	136,646,000
Increase, 1936	13,346,000	11,643,000	.....	...	19,040,000	†5,694,000	32,038,000	†20,395,000	†19,758,000
Increase, 1936	4.3%	3.8%	.....	...	6.5%	†34.2%	18.9%	†14.6%	†14.5%

*Excess supply. †Decrease. Note— Total supply equals domestic production plus imports. Total demand equals domestic demand plus exports. Data on demand for refined products are based on refinery shipments. ‡Crude oil only. §Includes finished, unfinished refinery gasoline and natural gasolines.

Crude Oil Runs to Stills and Total All Oils (Bbls.)

First 8 months—	Total imports§	Total exports§	Total crude to stills	Per cent yield gasoline‡	Nat. gasoline production	Total supply all oils*	Total demand all oils*	Stocks all oils August 31
1936	36,847,000	84,577,000	701,923,000	46.6	26,846,000	788,389,000	787,923,000	542,166,000
1935	35,584,000	80,539,000	629,592,000	46.9	24,830,000	708,071,000	714,166,000	558,053,000
Increase, 1936	1,263,000	4,038,000	72,331,000	....	2,016,000	80,318,000	73,757,000	†15,887,000
Increase, 1936	3.5%	5.0%	11.5%	....	8.1%	11.3%	10.3%	†2.8%

*Total all oils includes crude refined products, natural gasoline and benzol. †Decrease. §Includes crude oil and refinery products. In case of imports includes receipts in bond and for domestic use. All data based on Bureau of Mines reports. ‡Includes natural gasoline blended at refineries.

Big Companies Stage Gigantic Leasing Play in Illinois Area

By R. H. WHITNEY, JR.

FINDLAY, Ohio, Oct. 12.—The intense leasing campaign and geophysical research that has been going on in the central coal basin in Illinois for the past six months has quieted down considerably, and the majority of the major companies are moving their seismograph crews to other fields. Nearly all of the larger companies have been conducting a thorough research of the basin since Illinois State Bulletin No. 40 was published, giving conclusions of an investigation of the gas stratum. This bulletin confirmed the existence of sand and sandy lime formations which differ from a similar basin in Michigan in the fact that the Michigan basin holds only limestone, and mentioned four distinct highs, the Iola, in Clay, Marion and Fayette counties; the Omega, in Marion County; the Louisville, in Clay County, and the Xenia high, in Marion and Clay counties.

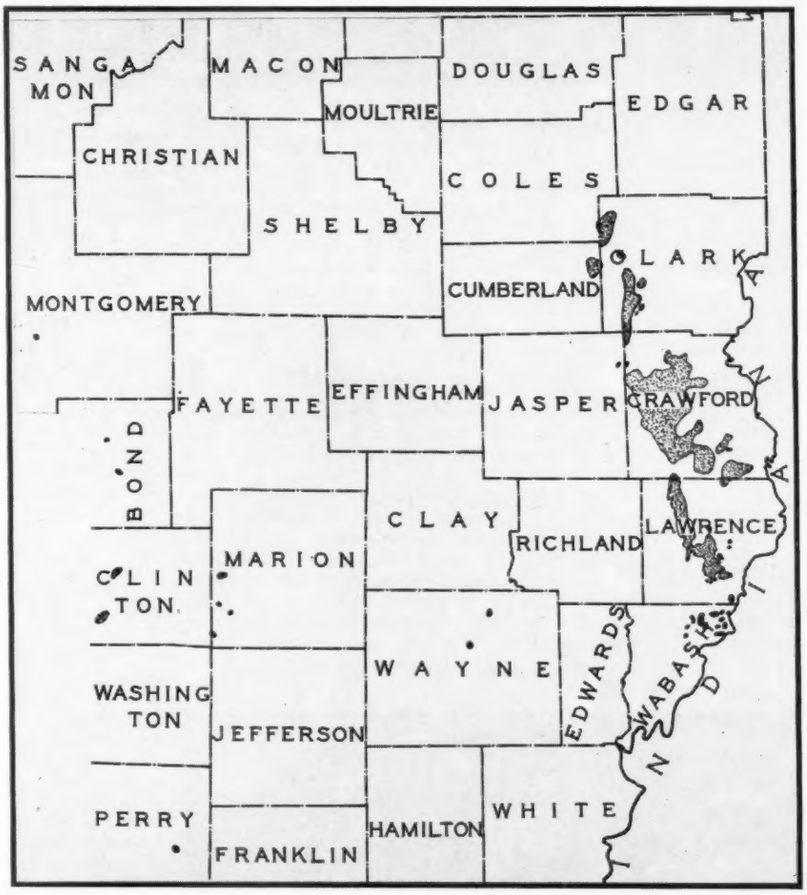
In spite of the extensive work done by the large number of seismograph crews, less than a dozen structures were found by this method, and the core drills have shown but few highs. Most of the geologists who have been in the basin area seem to be at sea as to what to expect and although they have worked out a number of surface highs, they have been depending more or less on seismograph and core drilling for their data. Shooting, so far, has been a sort of hit-or-miss proposition. So little drilling has been done in the basin area that the shooting crews do not know what they are shooting on, and the reflection may or may not be of any value.

Some geologists are of the opinion that it might be best to start testing the rim and gradually work out to the deeper horizons. The main play has been for the Trenton rock, which is found east of St. Louis, at approximately 400 feet, and dips out in the basin from 8,500 to 8,800 feet, making a steep incline around Robinson and Casey counties, where it flattens out into Indiana, and then, in the central portion of that state, dips again and runs into Ohio. Some geological reports indicate that the Kentucky sands dip northwestward into this basin and if these sands are found and are high enough to produce from the Chester lime and St. Peter sand, then without a doubt the basin area will be a great oil and gas field.

UNITIZED CORE DRILLING

Core drilling by coal companies in the district has given more intelligent information than any other method to date. One group of coal companies banded together and stood the expense of drilling and exploring what is known as the No. 6, coal stratum; and near Peoria distillery interests have drilled a number of water wells, and the records of these are being correlated. It is reported that these holes show some very interesting results.

In the recent state bulletin it was shown that the basin just south of central Illinois has interesting possibilities, but surface conditions were not sufficient to be conclusive. However, samples from mines, water wells, core holes and other subsurface features have confirmed the bulletin and show a great sedimentary basin in the eastern part of Fayette County, eastern Marion County, western part of Effingham County, western part of Clay County, eastern Jefferson and all of Wayne County.



A portion of the Central Coal basin of Illinois, in which area Mid-Continent oil companies have leased about 2,000,000 acres after a seismograph survey carried on by numerous companies during the past summer. Illinois has already produced about 425,000,000 bbls. of oil, but is looked upon as one of the most promising fields of exploration for deep pay sands

The major companies of the Mid-Continent field have been the most active in this area, but the play has also attracted smaller companies and individuals from the other fields. Acreage is cheap and leases have been bought for as little as $1 for a quarter section (160 acres), with ruling prices around 25 cents per acre for 10-year leases. The Carter Oil Co. was the first to start leasing, and it has been the most active, having approximately 1,000,000 acres under lease. The Pure Oil Co. has close to 500,000 acres leased and has staked two locations in the Fairfield-Cisne district, in sections 6-1n-8e and 36-1n-7e, of Wayne County. Gulf Oil Corp. is doing extensive leasing and blocking near Centralia, after a checkerboard play from Springfield. Shell Petroleum Corp. also is doing extensive leasing. The Texas Co. has leased approximately 250,000 acres around Jefferson and Mattoon. Magnolia Petroleum Co. and Adams-Louisiana Co. also have leased many thousands of acres and are blocking in northwestern Marion County. The Mid-Continent Petroleum Corp., Ohio Oil Co. and the Continental Oil Co. have many scattered leases and smaller companies and individuals have thousands of acres under lease.

DRILLING IN PERRY COUNTY

In Marion County, Baldwin & Co. of Claremore, Okla., have moved a rig on location in section 12-4n-4e, and after spudding, it has been shut down for orders. Charles Forrester is drilling a test in Douqoin Township, Perry County, and is down 4,100 feet at present time.

The work has not been confined to the basin area alone, but was extended into southwestern Indiana, and, all told, nearly 25 counties, lying in the basin and on the flanks, will come in for a play. A lot more drilling will be necessary, however, to determine what the basin has in store as far as new production is concerned.

12 SANDS TO BE TESTED

Unlike the Michigan play, where the lime was the main horizon for production, Illinois offers at least 12 different sands that may prove productive, anywhere from 1,000 to 6,500 feet and deeper. Shooting, so far, has shown some reflections of interest from the Chester series at approximately 2,600 feet in Marion, Fayette and Clay counties, and some correlations are reported in the Ordovician around 5,000 and 6,000 feet.

As stated heretofore, the Carter Oil Co. has been the most active in the purchase of blocks and in checkerboard acreage, but other companies have not been far behind. All have done seismograph work, except the Magnolia, which as yet has not shot any of its acreage. The Gulf is just getting fairly started in this work. At present there are six seismograph crews in the area, against 11 a month ago. The four highs worked by the state geological survey are practically all under lease to the Carter Oil Co.

Near Mount Vernon, in Township 3s, Range 4e, and in Jefferson County, the Carter has taken a block while in Township 1s-2e, in the north central portion of the same county, around Dix and

Walnut Hill, it has another block. Other Carter blocks are as follows: Southeast of Salem, in Townships 1 and 2n, Range 3e, Marion County; north of St. Paul, Marion County, in Township 5n-2e; near Mount Rose, in northeastern portion of Effingham and southwestern Cumberland counties, in Townships 8 and 9n, Ranges 7 and 8e; north of St. Elmo, in Township 8n, Ranges 2 and 3e, Fayette County. In Clay County it has one of the largest blocks of any company, covering the west side of Township 4n-6e, and east side of 5n-6e. This block is entirely solid with the exception of a small tract held by the Texas Co. There is approximately 25,000 acres in this block.

In addition to the above blocks the Carter has a heavy checkerboard of acreage with the Gulf and Shell companies along western edge of Washington County, starting around Richview and Ashley, running north through the town of Irvington. The Carter with the Pure Oil Co. has approximately three townships of leases south of Carmi, in White County.

EXTENDS INTO INDIANA

The Carter Oil Co. also took three blocks in Sullivan County, Indiana, one south of the town of Sullivan and two along the Wabash River, west of Sullivan. The company also has a heavy checkerboard through the north central part of Effingham County and south central Shelby.

The Pure Oil Co. has over 300,000 acres in one block, all small tracts, starting in the center of Wayne County, northeast through southeast Clay County and west side of Richland and up into Jasper County. It is on this block the company has made two locations—one in section 36-1n-7e and the other in section 6-1n-8e. This is the largest single block held by any one concern.

On a state high in Townships 4 and 5n, Ranges 4 and 5e, the company has large holdings and it is on a part of this acreage that Claremore, Okla., parties will drill a test.

The Adams-Louisiana company has a 40,000-acre block near Patoka, in northwestern Marion County, in Township 4n-1e.

The Sun Co., northwest of Taylorsville, in Christian County, has a block in Township 13n. Ranges 2 and 3w, in addition to a checerkboard play in other counties.

Although the Magnolia Petroleum Co. has only one block—northwestern Wayne County, and running over into Marion County, Townships 1 and 2n, Ranges 4 and 5e—it is well represented with scattered leases all through Wayne, Clay, Marion, Fayette and Effingham counties. In many of the blocks of the other companies it has scattered leases.

Another active concern has been the Ohio Oil Co. with several blocks and interests with other companies. Near Clay City, Clay County, it has a large acreage in Township 3n, Range 7e. In this block the Carter and Pure companies have an interest. In Townships 7n-10e, the Ohio has another block. This is east of Newton, in Jasper County. The Carter has scattered acreage through this block. The Ohio has a block in south central Shelby County in Townships 9 and 10, Range 3e. With the Shell Co. in Township 3s, Ranges 1 and 2w, the Ohio has a block which is in south end of Washington County, and north end of Perry County, near the town of Dubai.

Shell has a large block north and south of Newton, in central portion of Jasper County in Townships 5, 6, 7 and 8, Ranges 9 and 10e, and just north of Duquoin, Perry County, it has another in Townships 5 and 6s, Ranges 1 and 2w. North and east of Carlyle, Clinton County, the company has quite a checkerboard play. The company also has a block in Township 1s, Ranges 1 and 2w, in Washington County.

Southeast of Duquoin, Perry County, and southwest corner of Jefferson County, the Texas Co. has a block covering Township 6s, Ranges 1e and 1w. It also has a lease spread through Clay and Marion counties. With the Ohio Oil Co. it has a block south of Brownstown, Marion County, in Township 6n, Ranges 2 and 1e. In Bond County, near Mulberry Grove, Townships 5 and 6n, Ranges 2 and 3e, another block has been recorded. South of Mount Vernon, in Jefferson County, in Townships 4 and 5s, Range 1e, it has a block jointly with Carter, Ohio and Gulf companies.

The Gulf has a huge checkerboard play through four townships southeast of Vandalia, in Fayette County, as well as southeast of Springfield, in Christian, Effingham and Montgomery counties; in fact it has a big play throughout the entire area.

Just north of the St. Paul block of the Carter, the Texas Co. has a block near Brownstown, in Marion and Fayette counties, in Townships 5 and 6n, Ranges 2 and 3e.

In addition to the various blocks and checkerboard plays listed above there are numerous smaller operators and companies that have entered this play, from Oklahoma, Kansas, Michigan and other central west areas and with an active drilling campaign to be the result in the future this portion of Illinois may enter the limelight as a producing area of note.

REVIVAL IN OLD FIELDS

A revival of operations in the old Casey, Robinson and Lawrenceville pools, in southeastern Illinois, is assured and revival and deeper drilling is also predicted for the old Carlyle pool in Clinton County. South of the Carlyle pool the new Bartelso pool is creating a great deal of comment. The Trenton sand is at approximately 1,000 feet in that area, and six producers have been completed in the pool. The majority of the land is controlled by the Ohio Oil Co., which has completed three oil wells on the Trame farm, in Santa Fe Township, each of which is pumping 100 bbls., or more, a day. A group of men operating as McGaffigan & Fischer also have three producers in the Bartelso pool, and each of these is making in the neighborhood of 100 bbls. a day. Both organizations are planning extensive work and the Ohio Oil Co. is drilling another well on the Trame farm at this time. Three tests are nearing completion and should any of these be producers a sizeable extension will be made to the pool.

The Illinois area may also be of interest in as much as acidization is concerned as very little acid has been used in the state. Near Robinson some wells have been acidized that were making from one-half to 1 bbl. daily and increased to as high as 50 bbls. each. This work was for the Anaconda Copper Co. These good results will cause additional work of this kind especially in the area east of St. Louis, where the lime production is found at approximately 600 feet, and where good results should be obtained.

Latest type drilling rig at Rodessa

Americans May Now Prospect for Oil in Great Britain

American citizens and corporations are permitted to engage in oil prospecting and development in Great Britain under an interpretation of the British Petroleum (production) Act of 1934 and the Petroleum (production) Regulations of 1935 reached following an exchange of views between the governments of Great Britain and the United States.

The Petroleum Regulations of 1935 provide that in the case of aliens or foreign-controlled companies desiring to search for oil in Great Britain, a license may only be held by nationals of those countries whose laws and customs afford comparable rights to British nationals. Similarly, the U. S. Mineral Leasing Act of 1920, which governs the grant of oil leases on federal lands, contains a proviso that citizens of another country whose laws deny like privileges to citizens or corporations of the United States shall not own any interest in any lease acquired under the provisions of that act.

Capt. Harry Crookshank, M.P., British secretary for mines, has announced that a prospecting license has been issued by the Board of Trade to Maj. C. A. Pogson and E. H. Cunningham-Craig, carrying on business as the Midlothian Petroleum Syndicate at "Wanowri," Barrowfield Drive, Hove. The license covers approximately 12 square miles in the county of Midlothian.

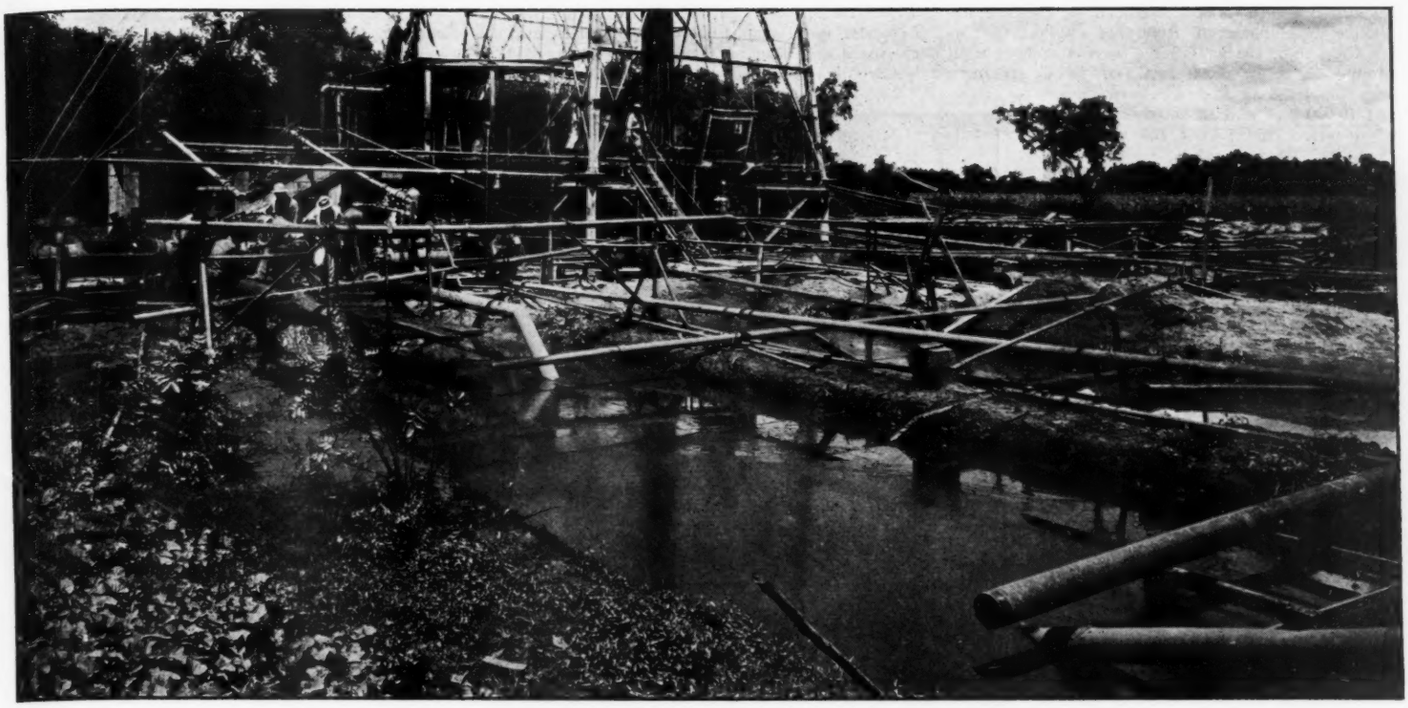
Bow Island Gas Storage

LETHBRIDGE, Alberta, Oct. 10.—More than 8,500,000,000 feet of waste gas from the Turner Valley field has been stored in the depleted sands of the Bow Island field since repressuring was started in 1930, according to a recent statement of P. D. Mellon, general superintendent of Canadian Western Natural Gas, Light, Heat & Power Co. The rock pressure, greatly reduced during the life of the field from its original figure of 750 pounds, has already been brought back to about 550 pounds. The field originally covered about 30 square miles, but due to withdrawal of gas and encroachments of edge water, it now approximates 16 square miles. It is estimated that 39,000,000,000 feet of gas was withdrawn during the productive life of the field. The repressured field is being held as a reserve for emergencies. So far the scheme has not cost gas consumers anything, but when gas is withdrawn a small charge will be made against operating account.

Oklahoma City Potential

The 1,031 Wilcox-sand wells under proration in the Oklahoma City field are credited with a potential production of 1,353,117 bbls. on October 1. This is an average of 1,312.5 bbls. per day per well.

The Blackstock Oil Co. No. 1 Tegtmeyer, in section 36-14-4w, which extended the Edmond pool in Oklahoma County a quarter mile westward, flowed six hours at the rate of 21,600 bbls. per day on Monday. Simpson Dolomite is the pay formation.



Heavy equipment and elaborate mud system used by Harrison & Abercrombie in drilling Gulf Coast's deepest oil producer at Old Ocean, coastal Texas

Exploration for Deeper Oil Speeds Coastal Drilling

By NEIL WILLIAMS

HOUSTON, Tex., Oct. 12.—Exploration for deeper oil reserves on the Gulf Coast this year has pushed drilling and production depths to record levels and has brought a rapidly increasing amount of development in these lower horizons. This has been more widespread as more fields and areas have been exploited for deep sand potentialities.

During the first nine months of this year 130 wells drilled to below 8,000 feet were added This was nine more wells than were added during 1935. On October 1 there were 316 wells which had been drilled to 8,000 feet or below, which, compared with 186 at the opening of the year, represented an increase of more than 78 per cent.

This year has witnessed the drilling of the Gulf Coast's first 11,000-foot hole, Continental Oil Co. No. 1 Hebert, a wildcat on the Abbeyville Prospect in Vermilion Parish, coastal Louisiana, now at total depth of 11,732 feet, the second deepest test in the world, lacking 1,054 feet of equaling the 12,786 feet set by Gulf Oil Corp. No. 103 McElroy, Upton County, West Texas. There have been only four tests in the world drilled below 11,000 feet.

Of particular interest in connection with the Abbeyville test is that it encountered strong gas pressures around its present depth and tried to blow out, giving indication of possible production. Denver Production & Refining Co. No. 1 A-Dah-Noe, in Oklahoma, has been making a small amount of oil with bottom of hole at 11,230 feet, but no other producing wells have been completed below 10,000 feet. The outcome of the Abbeyville test is being delayed by a fishing job to recover stuck drill pipe.

Completion within the past month of a producing well at 9,963 feet at Old Ocean, Brazoria County, has set a record for deep commercial production. This well was drilled by Harrison & Abercrombie, sole operators in the field. It came in flowing initially at the rate of 15 bbls. hourly through small chokes. Pressures of this well are believed to be the highest on record, running at times up at 3,800 pounds. The well is the third in the field, the first two wells having been completed in an 8,600-foot sand.

Previously the deepest commercial production was in the Lafitte field, Jefferson Parish, Louisiana, where Texas Co. has been developing a 9,600-foot sand. That field was opened in May, 1934, and in the two and a half years since the depth record in that field has been unchallenged although a number of tests drilled to lower levels have had important showings with indications of deeper production. There now are eight producing wells in the Lafitte field, all from the 9,600-foot horizon.

Recently, a test at Lafitte has been drilled past the 9,600-foot sand and promises production below 10,000 feet. It had a sand showing good saturation at 10,058-64 feet, which operators considered would make a well. At latest report the hole was being drilled below 10,642 feet, operators figuring on coming back to the 10,000-foot sand later.

Commercial production below 9,000 feet has been established in one additional field this year, South Bay City, near Bay City, Matagorda County, where last March Hamman Exploration Co. completed a wildcat producer in sand at 9,361-70 feet. This well flowed initially at the rate of 230 bbls. daily through a three-sixteenths inch choke. Until the completion of the Old Ocean producer at 9,963 feet recently, this was the deepest production on the Texas Gulf Coast. The well had been drilled to 9,428 feet, where casing was cemented, and perforated at its present producing depth.

With the addition this year of Old Ocean and South Bay City, there now are five fields on the Gulf Coast with production below 9,000 feet, including Bosco, in Acadia and St. Landry Parishes, Louisiana, and Dickinson, Galveston County, Texas, besides Lafitte, Old Ocean and South Bay City. Bosco and Dickinson have production in 9,000-9,100-foot sands, the former having three wells at that depth and the latter six wells. Both also have shallower production.

Van Vleck, Matagorda County, has been added to the fields with production below 8,000 feet with the completion of two good wells in a sand at 8,250-8,300 feet. This makes a total of eight fields with production below 8,000 feet. Four, Bosco, Tepetate and Roanoke on the Louisiana coast and

TABLE 1—PRODUCING WELLS ON GULF COAST BELOW 8,000 FEET, BY FIELDS

Fields—	Below 10,000 feet	9,500-10,000 feet	9,000-9,500 feet	8,000 feet	Total
Bosco	0	0	3	46	49
Dickinson	0	0	6	36	42
Lafitte	0	5	3	0	8
Old Ocean	0	1	0	2	3
Roanoke	0	0	0	17	17
Shepherds Mott*	0	0	0	1	1
South Bay City	0	0	1	0	1
Tepetate	0	0	0	30	30
Van Vleck	0	0	0	2	2
White Castle	0	0	0	1	1
Total	0	6	13	135	154
Total January 1	0	3	8	74	85
Increase	0	3	5	61	69

*Not commercial production.

Dickinson on the Texas coast, have received extensive development in 8,000-foot sands.

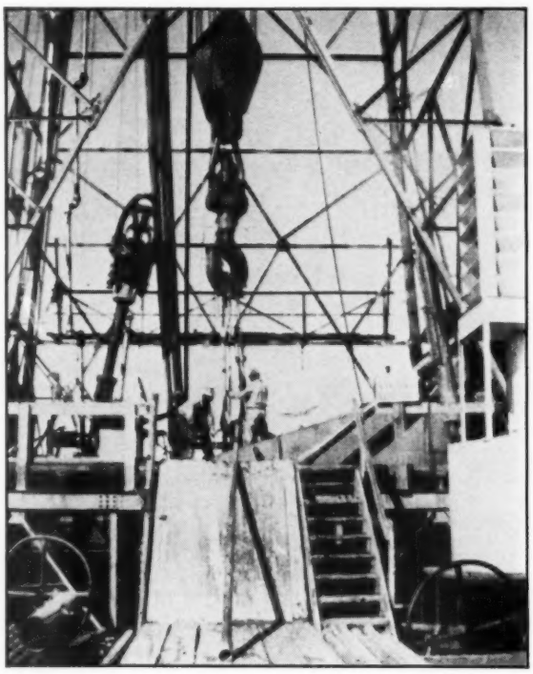
Altogether, 154 wells have been completed with production below 8,000 feet. Of these, six have been completed as producers between 9,500 and 10,000 feet and 13 between 9,000 and 9,500 feet. This leaves 135 wells completed in 8,000-foot sands.

Including Continental Oil Co.'s Abbeyville test at 11,732 feet, eight tests have been drilled below 10,000 feet, four having reached such depths this year. These were in Coastal Louisiana, all Texas coastal tests having fallen short of the 10,000-foot mark. Two have been at Roanoke, Jefferson Davis Parish, one at Bosco, one at Lafitte, and three on wildcat prospects. The Abbeyville and Lafitte tests are the only two still active, the others having been abandoned.

Besides the Abbeyville and the Lafitte tests, two of these wells below 10,000 feet have given indication of production at this depth. Shell Petroleum Corp. No. 1 Jarnigan, at Roanoke, drilled to 10,750 feet, and Superior Oil Producing Co. No. 1-A Martinez, at Bosco, drilled to 10,005 feet, encountered heavy gas pressure below 10,000 feet. The Shell well blew out and operators had difficulty in trying to bring it under control. Due to bad hole conditions and mechanical difficulties, operators were unable to complete a well.

Exclusive of the eight tests drilled below 10,000 feet, 73 tests have been drilled to below 9,000 feet, and 235 additional tests below 8,000 feet. Of the 9,000-10,000-foot tests, 32 have reached 9,000 feet this year, and of the 235 tests drilled below 8,000 feet, 94 have reached that depth this year. Of the 73 tests drilled below 9,000 feet, 20 have drilled to below 9,500 feet, 11 having reached that depth this year.

In the list of 316 tests drilled below 8,000 feet, 253 have been in 40 definitely established fields, and the remaining 63 tests have been on scattered wildcat prospects or unproductive domes. The most extensive development below 8,000 feet at any single place has been at Bosco, where 60 tests have been drilled below that depth. Next in line comes Dickinson, where 54 such tests have been drilled. These are followed by Tepetate with 35 tests, Roanoke with 27, Lafitte with 10.



Fishing stuck drill pipe in 11,732-foot well drilled by Continental Oil Co. at Abbeyville, Coastal Louisiana

TABLE 2—TOTAL TESTS BELOW 8,000 FEET DRILLED ON GULF COAST, BY FIELDS

Fields—	Below 10,000 feet	9,500-10,000 feet	9,000-9,500 feet	8,000 feet	Total
Amelia	0	0	0	1	1
Anahuac	0	0	0	2	2
Barbers Hill	0	0	0	1	1
Bayou Mallet	0	0	0	3	3
Big Lake	0	1	1	1	3
Bosco	1	0	5	54	60
Buckeye	0	0	1	1	2
Cameron Meadows	0	0	1	0	1
Cleveland	0	0	0	1	1
Conroe	0	0	0	1	1
Dickinson	0	0	12	42	54
Dog Lake	0	0	0	1	1
East Hackberry	0	0	0	5	5
Edgerly	0	0	0	1	1
Esperson	0	0	1	2	3
Gillis	0	0	1	3	4
Green Lake	0	1	0	0	1
Gueydan	0	1	0	1	2
Hardin	0	0	0	1	1
Hastings	0	0	0	1	1
Humble	0	0	0	1	1
Iowa	0	0	1	0	1
Jeanerette	0	0	1	1	2
Jefferson Island	0	0	0	1	1
Jennings	0	0	0	5	5
Lafitte	1	6	3	0	10
Lockridge	0	0	0	1	1
Louise	0	0	0	2	2
Old Ocean	0	1	0	2	3
Pledger	0	0	0	1	1
Refugio	0	0	1	1	2
Roanoke	2	1	4	20	27
Shepherds Mott	0	0	1	1	2
South Bay City	0	0	1	0	1
St. Martinsville	0	0	0	3	3
Sweet Lake	0	0	0	2	2
Tepetate	0	0	2	33	35
Thompson	0	0	0	1	1
Van Vleck	0	0	0	4	4
White Castle	0	0	0	1	1
Miscellaneous	4	9	17	33	63
Total	8	20	53	235	316
Total January 1	4	11	30	141	186
Increase	4	9	23	94	130

Oil and Gas Tax Measures in Texas Legislature

AUSTIN, Tex., Oct. 13.—Texas house of representatives Tuesday started debate on efforts to reconsider its action of Monday when by a one-vote margin it adopted a 5 per cent and 5-cent minimum rate tax on oil in the single-shot Reader-Reed bill. Earlier the house had given a substantial majority to a 3¼ per cent rate.

The senate state affairs committee will finish hearings Tuesday afternoon and vote on the James-Frazer omnibus tax bill which increases the 2 per cent gas tax to 2¾ per cent. This bill has passed the house with these rates.

The effect of the single-shot bills, if passed by both houses, would be an attempt to increase the rates in the final omnibus tax as shaped by a conference committee after the senate passes on it. Opinion was the senate will hold tax levies to the rates of the omnibus bill, and that this measure will pass despite efforts of sales tax sponsors to substitute a 2 per cent sales levy for the natural resource taxes. Representatives of oil and other industries who sought no hearing in the house, asked and secured a brief hearing before the senate committee on the omnibus bill.

New Mexico Map

The state bureau of mines and mineral resources of the New Mexico School of Mines, at Socorro, has just issued a revised edition of the "Oil and Gas Map of New Mexico," which is included in Bulletin 9 of the bureau, "The Oil and Gas Resources of New Mexico," by Dean E. Winchester. The map has been revised by A. Andreas to July 15, 1936.

According to E. H. Wells, director of the bureau, the map shows the axes of nearly 200 anticlinal structures, and the location, total depth and results (by symbol) of approximately 1,200 wildcat wells. Known oil and gas fields are indicated, and the location of main oil and gas pipe lines, refineries and natural gasoline plants are shown. Areas where carbon dioxide gas occurs are indicated. The map is printed in one color, with a scale of 1 to 1,000,000, or approximately 1 inch to 16 miles. Printed on paper, 75 cents; $1.25 mounted on cloth.

Crude Oil Stocks

WASHINGTON, D. C., Oct. 12.—The Bureau of Mines reports stocks of domestic and foreign crude petroleum for the week ended October 3 totaled 294,349,000 bbls., a decrease of 219,000 bbls. from the previous week. Domestic crude stocks decreased 335,000 bbls. but foreign crude increased 116,000 bbls.

The bureau reported there were indications of a "substantial decline" in crude oil production but that imports and runs to stills showed gains. Crude runs to stills averaged 3,035,000 bbls. daily, an increase of 20,000 bbls. above the previous week. Daily average imports were 123,000 bbls., an increase of 35,000 bbls.

STOCKS OF CRUDE PETROLEUM

(In thousands of barrels of 42 gallons)

	Sept. 26	Oct. 3
Pennsylvania	4,100	4,163
Other Appalachian	677	647
Lima-N.E. Indiana-Michigan	1,094	997
Illinois-S.W. Indiana	9,982	9,952
N. Louisiana and Arkansas	10,660	10,706
West Texas and S.E. New Mexico	28,999	28,751
East Texas	19,679	20,078
Other Mid-Continent	117,678	117,358
Gulf Coast	27,462	27,228
Rocky Mountain	26,680	25,727
California	30,244	30,313
Foreign	2,013	2,129
Total reported weekly	278,268	278,049
Estimate of unreported stocks	16,300	16,300
Total stocks	294,568	294,349

OBITUARIES

H. S. MARTIN, 59, Fort Worth, Tex., oil operator, was drowned in Lake Worth Dam last week.

PROF. W. A. PARKS, 68, head of the department of geology of the University of Toronto, died suddenly recently.

EDWIN KERBY WALLEN, 40, died at Bucharest, Rumania, recently. A native of Oil Springs, Ontario, Mr. Wallen spent the greater part of his life drilling in foreign fields.

CLOYD A. HALE, superintendent of the Canadian Oil Companies, Ltd., refinery at Petrolia, Ontario, for 25 years, died from heart attack. A native of Findlay, Ohio, he was employed with National Refining Co. until transferred to the Petrolia plant 28 years ago.

EARL H. ROUSE, of Parkersburg, W. Va., representative for the Edwin H. Fitler Rope Co., of Philadelphia, Pa., was tragically killed near New Martinsville, W. Va., in an automobile accident. He was widely known throughout the oil fields of Texas and Oklahoma.

HENRY CONNOCHIE, of the Imperial Oil, Ltd., refinery staff at Sarnia, Ontario, died suddenly recently.

CHARLES F. BISETT, pioneer producer in the Bradford and Sistersville districts in the Eastern fields, and a successful Oklahoma operator and producer since 1910, died in Tulsa on October 6 at the age of 73 years. Mr. Bisett had long had faith in old settled production as an investment and owned a considerable number of properties of that character, and was active in drilling up to his last illness.

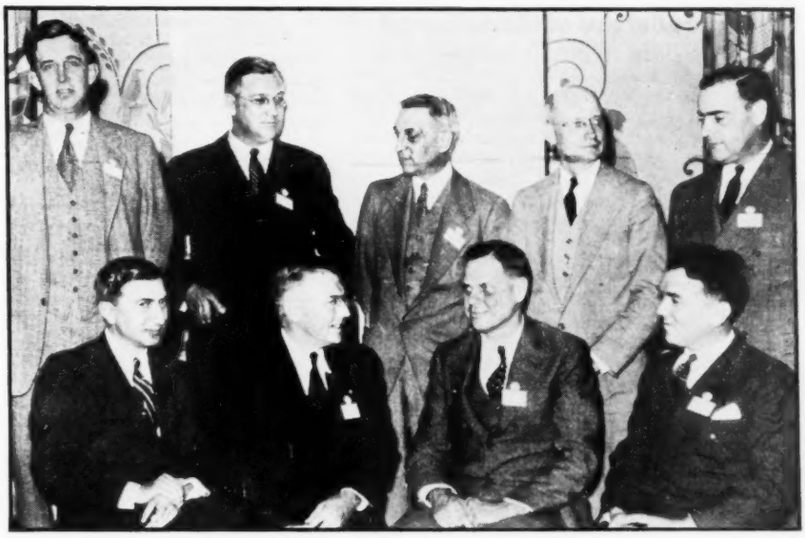
TESTS ON GULF COAST DRILLED TO DEPTHS BELOW 10,000 FEET

Company and well—	Field	Parish*	Depth (ft.)	Status	Date comp.†
Continental Oil Co., No. 1 Hebert	Wildcat	Vermilion	11,732	Fishing	.....
Shell Petroleum Corp., No. 1 Jarnigan	Roanoke	Jeff. Davis	10,750	Abnd.	9/35
Texas Co., No. 5 Rigolettes	Lafitte	Jefferson	10,642	Drlg.	.....
Humble Oil & Refining Co., No. 1 Nelson Thomas	Roanoke	Jeff. Davis	10,583	Abnd.	10/35
Superior Oil Producing Co., No. 1 Duplanter	Wildcat	E. Baton Rouge	10,360	Abnd.	10/35
Humble Oil & Refining Co., No. 1 Continental	Wildcat	Terrebonne	10,254	Abnd.	9/35
Shell Petroleum Corp., No. 1 Realty	Wildcat	Terrebonne	10,155	Abnd.	3/36
Superior Oil Producing Co., No. 1-A Martinez	Bosco	St. Landry	10,005	Abnd.	1/35

*All in Coastal Louisiana. †Month and year.

Research Program Favored by Road Oil Congress

By W. T. ZIEGENHAIN



Oil men and engineers who took active parts in meeting. Standing left to right are E. B. Donohue, assistant highway engineer, Montana; F. S. Gilmore, engineer with Asphalt Institute; L. M. Law, chief chemist, Shell Petroleum Corp.; F. G. Allison, chief chemist, Arkansas Highway Commission, and L. L. Marsh, engineer, Kansas Highway Department. Seated in same order: Dr. Sidney Born, Tulsa University; Van T. Moon, engineer, Oklahoma Highway Commission; H. G. Nevitt, manager asphalt division, Socony-Vacuum Oil Co., White Eagle Division, and Emby Kaye, vice president Skelly Oil Co., and general chairman of the congress

Providing a most timely medium for the exchange of ideas between refiners and highway engineers, the fifth National Road Oil and Asphalt Congress, sponsored by the Western Petroleum Refiners Association, meeting in Tulsa last week, accomplished one very definite thing. Those present agreed that, on the part of a few, there are weaknesses in the present method of manufacturing asphaltic road building materials and abuses practiced in their sale and use, and the congress went on record favoring bringing these facts out into the light and supporting a program of research.

Emby Kaye, vice president of Skelly Oil Co., and general chairman of the meeting, encouraged the frank discussion of the problems, and Dr. Sidney Born, of the University of Tulsa, emphasized the need to act by pointing out that the quantity of asphalt used annually is on the decline and the same is true of road oil, concluding his remarks by saying, "There is great need for a coordinated cooperative research program covering the field of asphalt road materials and I strongly urge your association to sponsor such an investigation."

Upon this suggestion the congress acted immediately, passing a resolution which lays the foundation for close cooperation of the U. S. Bureau of Public Roads, the various state highway departments, the producers of asphalt and other materials and oil technicians.

The need for the fullest cooperation was best illustrated in the paper presented by H. S. Gillette, materials engineer for the U. S. Bureau of Public Roads, who said:

"Looking into the future we may see that in so far as the destinies of asphalt highway construction depends upon engineers themselves, many things might be done. But, above all, many things should not be done, and the first of these things that engineers should not do is to let themselves be too strongly impressed by the artful suggestions of a loquacious fringe of backstair salesmen, or the suggestions which emanate from a compromise of arguing producers who never can agree among themselves upon what is a satisfactory asphalt or substantial asphalt construction practice.

"The asphalt industry is made up of conscientious manufacturers and those that are not conscientious sales practitioners. Engineers must help the public find the goods it needs. To do this successfully the engineers must of necessity learn a good deal about their own limitations, as well as the relative advantages of listening to the advice of the conscientious producers. The best advice is the advertisement of successful results. This promotes a maximum sale of products or services for a minimum expenditure. In the realm of asphaltic production and the responsible agencies there are diffused suggestions about asphaltic construction and asphaltic procedure that are just about as objectionable on practical grounds as the suggestions and the practices of the most unscrupulous patent medicine racketeer. This type of salesmanship hates and ridicules consumers' cooperation. This type within the business has resisted by open and backstair methods every attempt thus far made to introduce desirable checks into the specifications.

"There has been a tendency by those selfishly interested in asphalt production and asphaltic construction to make it more or less a matter of mystery; to make it an art that cannot be mastered other than by some wierd incantations or mysterious whispers. This is indeed unfortunate. When a greater and a more simple understanding of asphalt and asphaltic construction is set up for the great American public in particular, and a great many engineers in general, much of the failure in asphaltic construction and resistance to asphaltic construction will be accomplished. In the recent past there has been a tide of diminishing returns in the quality of asphalt highway construction in this section of the country. There has been too much work of a nebulous character to even suggest an increasing adoption of this type of economic construction, or prevent a rise of pub-

(Continued on Page 56)

Montana boasts of 4,000 miles of oil and asphalt roads like this

Natural Gasoline

August Bureau of Mines Report

The production of natural gasoline continued to increase in August, according to a report prepared by the Bureau of Mines for that month, the daily average production being 4,751,000 gallons as compared with an average of 4,545,000 gallons on July. This gain was probably related to the increase in crude oil production. The increased output of August was generally distributed among the producing districts, such leaders as Kettleman Hills, Oklahoma City and the Panhandle registering the largest gains. The output in East Texas was practically unchanged although crude oil production was substantially higher.

The production of the various districts, in thousands of gallons, was as follows: Appalachian, 4,069; Illinois, Michigan, Kentucky, 756; Oklahoma, 35,274; Kansas, 2,771; Texas, 42,435; Louisiana, 4,703; Arkansas, 1,014; Rocky Mountain, 5,572; California, 50,700.

Stocks of natural gasoline continued to decline as a result of increased refinery demand, the total on August 31 being 237,426,000 gallons, compared with 245,532,000 gallons on hand July 31. Stocks at refineries declined from 122,850,000 to 121,800,000 gallons and stocks at plants and terminals declined from 122,682,000 to 115,626,000 gallons. Refinery stocks held in the East Coast and California declined during the month, while those in Texas, Kansas and Oklahoma increased. Stocks at plants and terminals in Texas decreased by approximately 6,000,000 gallons.

Exports of natural gasoline increased from 7,972,000 gallons in July to 9,196,000 gallons in August but shipments to refinery-owned bulk plants and to jobbers and retailers declined from 12,482,000 gallons to 9,976,000 gallons.

The average vapor pressure responded to seasonal influences, rising from 18.6 pounds in July to 18.9 pounds in August.

Coltexo Operating Plant

SHREVEPORT, La., Oct. 11.—The Coltexo Gasoline Co. will begin the manufacture of natural gasoline at its newly constructed 50,000,000-foot capacity absorption plant at Rodessa, La., this week. The plant is located in section 14-23-16, on Standard Oil Co. of Louisiana's Sexton property. Cost of the plant is estimated at $200,000.

California August Production

Natural gasoline production in California increased 1,000 bbls. daily to 39,000 bbls. daily during August, while total demand increased 5,000 bbls. daily to 227,000 bbls. daily according to the Bureau of Mines report for August. Stocks decreased 77,000 bbls. and amounted to 2,169,000 bbls. at the end of the month, or just slightly over the stocks of 2,132,000 bbls. on hand a year ago.

Daily average production of liquefied petroleum gases increased from 1,557 bbls. to 1,648 bbls., of which 424 bbls. were produced at refineries in August. Daily average sales increased from 1,171 bbls. to 1,809 bbls. Still gas production amounted to 2,145,362,000 feet, equivalent on a B.t.u. basis to 544,207 bbls. of fuel oil.

Natural gasoline production by fields was as follows:

NATURAL GASOLINE PLANT OPERATIONS

AUGUST, 1936

Field—	Gas treated (thou. cu. ft.)	Nat. gasoline Prod. (gals.)
San Joaquin Valley:		
Elk Hills	66,451	125,686
Kettleman Hills	10,213,378	14,980,933
Midway-Sunset	1,191,383	2,388,907
Mountain View	1,474,434	1,300,894
Miscellaneous	2,908,339	1,913,648
Coastal region:		
Elwood	678,970	1,067,078
Rincon	58,112	102,005
Santa Maria	132,886	388,503
Ventura Avenue	3,169,308	4,168,037
Miscellaneous	324,744	325,396
Los Angeles Basin:		
Brea-Olinda and Coyote	538,531	1,585,404
Domingues	1,258,767	2,109,875
Huntington Beach	1,710,610	3,705,761
Inglewood	221,158	319,029
Long Beach	1,978,596	7,758,220
Playa del Rey	502,604	1,507,958
Richfield	215,681	406,083
Rosecrans	516,130	657,287
Santa Fe Springs	2,279,402	4,988,856
Seal Beach	540,490	672,694
Torrance	106,592	218,519
Miscellaneous	449,589	561,072
Totals (all fields)	30,536,155	51,251,845

DISTRIBUTION

	Gallons	
Stocks beginning of month	2,080,699	
Production during month	51,251,845	
Delivered to refiners	.....	49,566,793
Delivered to jobbers, brokers, or blenders	.....	1,557,752
Blended at plants for production of motor fuel	.....	6,726
Losses	.....	127,890
Stocks end of month	.....	2,073,383
Totals	53,332,544	53,332,544
	(Gals.)	(Bbls.)
Liquefied petroleum gas production	1,594,206	37,957
Motor fuel produced	11,525	274

C.N.G.A. Fall Meeting

LOS ANGELES, Calif., Oct. 10.—The California Natural Gasoline Association will hold its fall meeting on November 5, at the Biltmore Hotel, Los Angeles. Several interesting papers are scheduled to be given at the technical sessions, the morning meeting to be presided over by William Moeller, Jr., and the afternoon session by J. C. Burks. The program as now arranged follows:

MORNING SESSION

9:30-9:45—President's address, (R. D. Gibbs, president).

9:45-10:00—Address, F. E. Foster, managing director, California Oil and Gas Association.

10:00-12:00—Report, technical committee. Paper, "Safety," N. C. Wells. "Compressors," Lyman Scheel. "Liquified Gas," Frank Burt.

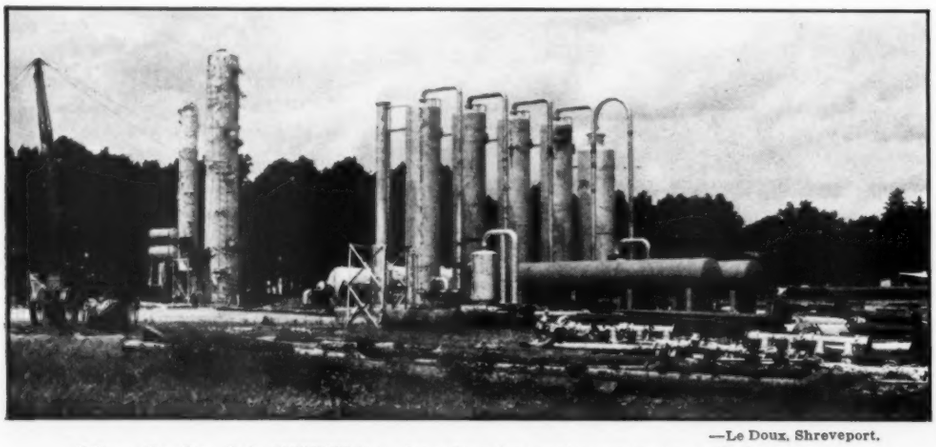
AFTERNOON SESSION

2:00—Opening remarks by chairman, J. C. Burks, vice-president.

2:00-3:00—"Coast Defense," Lieut. Colonel Oldfield, U.S.A.

3:00-4:00—Polymerization, M. W. Kellogg Co.

4:00-5:00—"Influence of Automobile Design on the Use of Natural Gasoline," C. C. Moore, Jr., and Dr. R. I. Stirton.



—Le Doux, Shreveport.

Coltexo Gasoline Co.'s 50,000,000-foot absorption plant under construction in Rodessa to serve properties of Standard Oil Co. of Louisiana

Refinery Projects

Operating on Mid-Continent Crude

MUSKEGON, Mich., Oct. 12.—Old Dutch Refining Co. of Muskegon, Mich., is maintaining operations on a basis of 3,000 bbls. of crude daily with about 2,000 bbls. a day of Mid-Continent crude and nearly 1,000 bbls. of central Michigan crude.

Tug Rea Powers, of Boston, Mass., and two 6,000-bbl. tow barges successfully made five round trips from East Chicago to Muskegon on Lake Michigan during September maintaining its schedule of 60,000 bbls. a month for the rest of the 1933 navigation season.

Next year it is planned to ship about 90,000 bbls. a month via Texas-Empire Pipe Line to East Chicago and thence by barge to the Muskegon harbor, where the Old Dutch maintains a lake-front wharf and tank farm.

With a new 1,500-bbl. T.V.P. vapor phase cracking unit rapidly nearing steady operation stage and an enlarged skimming capacity the Old Dutch plant is expected to be operated at 5,000-bbl. capacity next year, it was announced by John Borden, president and general manager.

Parsons Company

CHICAGO, Oct. 12.—The Ralph M. Parsons Co., Chicago, refinery engineers and contractors, and H. A. Brassert & Co. of Chicago and London, consultants and contractors in the steel industry, are now associated.

The Parsons company, which specializes in the design and construction of Dubbs cracking units, built the $2,500,000 Wilshire refinery recently completed at Los Angeles, also plants in Montana and New Mexico. Several other Parsons jobs are now under construction in the United States and Canada.

Each company keeps its own identity, management and organization, but they work together, using their combined engineering and financial resources.

Plan Outlets for New Field

FORT WORTH, Tex., Oct. 10.—Plans for the construction of two new pipe lines and two refineries in the Talco and Sulphur Bluff areas, the projects involving the expenditure of approximately $1,400,000, was made known this week by two groups of Dallas independents. The two groups involved are Capt. J. F. Lucey and associates and Dudley S. Golding and Clint W. Murchison, heads of the American Liberty Pipe Line Co.

The latter company is now surveying for a 6-inch line from the Sulphur Bluff pool in Hopkins County through the Talco pool to the company's East Texas line. The new line will be 70 miles long, the cost with storage and pumping equipment being estimated to be about $450,000. Construction of the refinery, which will include a cracking unit of approximately 500,000 bbls. capacity, is to be started soon, it was stated.

Captain Lucey, Ralph E. Fair and Byrd-Frost, Inc., the other group, have let a contract for 20 miles of 6-inch pipe to be laid from the Talco pool to the new refinery the group has agreed to build. The refinery will be located on the Cotton Belt Railway, probably at Mount Pleasant or Mount Vernon, and is to have a daily cracking capacity of about 3,500 bbls.

Pipe Line Activity

Michigan Construction

MUSKEGON, Mich., Oct. 12.—West Michigan Consumers Co. has petitioned the Michigan Public Utilities Commission for permission to lay a 12-mile, 6-inch gas line from its Muskegon distribution system to the new Ravenna Township field proved last week by a Berea gasser making 1,014,000 feet daily.

About $50,000 will be spent to lay the main line and about 3 miles of 3-inch gathering system for which pipe has been ordered, it was announced by John L. Robinson, manager of the system serving about 25 major Muskegon industries. The line will be completed in about 45 days.

Construction of the 13-mile oil line extension and booster stations to increase the capacity of the Michigan-Toledo line to move Pure Transportation Co. crude from Central Michigan to Toledo overland instead of by tanker from the Bay City, Mich., waterfront terminal, was started last week by Simrall Pipe Line Co. at a cost of about $150,000. Capacity of the 140-mile line from Crystal to Toledo will be increased 50 per cent from 12,000 bbls. to 18,000 bbls.

Gulf Gathering Line

FORT WORTH, Tex., Oct. 12.—The pipe line department of Gulf Refining Co. is laying a crude gathering line (6-inch) from its tank farm and pump station from Monahans south to connect with the company's wells on its E. W. Estes lease in section 38, Block 34, H.&T.C. Survey, southern Ward County. Some 11 miles of pipe is being laid for this connecting link.

Rochester Gas Line

ROCHESTER, N. Y., Oct. 12.—Construction of a 14-inch pipe line from the natural gas fields of northern Pennsylvania to the city line of Rochester, linking the Kodak Park plant of the Eastman Kodak Co., a $1,500,000 project, is scheduled to start next week. Contract for the job has been let to I. C. Little, **Dallas.**

Officials of the Rochester Gas & Electric Corp. who have opposed the construction of the line, have notified the Public Service Commission it would ask for a rehearing of the formal Public Service Commission order permitting construction of the line.

The commission recently granted the order over the ruling of Commissioner Maurice C. Burritt, who handled the case and recommended disapproval on the grounds that natural gas should be saved for domestic use.

LeFlore Gas Line

The LeFlore County Gas Co., Poteau, Okla., is to build 25 miles of 8-inch Lindewelded gas line with terminals at Red Oak, Okla., and a point approximately 10 miles northeast of Poteau. Construction will start about October 20 and will be done by the owners.

Canadian Pipe Line Agreement

CHATHAM, Ont., Oct. 10.—Announcement has been made of completion of a deal between British American Oil Co. and Royalite Oil Co. whereby Turner Valley crude intended for British American will be transported from the field to Calgary over the Royalite pipe line. Field connections are being made to handle production from the various wells with which the British American company has contracts. On delivery at Calgary the production will either be run to the Bell Refining Co. plant or shipped to the British American plant at Moose Jaw, Saskatchewan.

Production for the British American company has heretofore been handled by tank trucks. Since Turner Valley Royalties No. 1 was brought in last June these facilities have been heavily taxed, and the necessity of ensuring steady and continuous crude deliveries during the winter season has led to the new arrangement. The trucks will be utilized for distributing refined products from the British American storage tanks at Calgary.

Line to Jesse Field

Right of way leases for a pipe line between Oklahoma City and the Jesse field, to be built by the Continental Oil Co., have been filed in Oklahoma City. The company has completed a survey but no contract has yet been awarded.

Natural Gas

Gas Tests Nearing Oriskany

PITTSBURGH, Pa., Oct. 12.—Several gas tests in Kanawha County, West Virginia, are reaching the Oriskany sand. In Poca district, William O. Ziebold is down 4,721 feet on the Griffith and Dixon lease with the top of the Corniferous lime at 4,714 feet. His test on the Avilee Baldwin farm is down 1,707 feet. The most westerly and interesting drilling well in the district is that of the United Carbon Co. on the George W. Facemyer farm, drilling at 3,400 feet. This company is drilling at 3,500 feet on the S. H. Milam farm and 3,650 feet on the W. P. Moss farm. The United Fuel Gas Co. is down 1,425 feet on the A. J. Bruen and others lease. The Brawley-Reed Oil & Gas Co. is drilling at 2,025 feet on the C. C. Fisher farm.

In Elk district, Benedum-Trees Oil Co. has rigging up on the Mary J. Slack farm about 2,000 feet due south of No. 2 Mary C. Wingfield No. 2. This will provide a test for a southern extension of which little is known.

In this district, Yoak Oil & Gas Co. is running casing to 4,839 feet in No. 2 Goshorn Heirs. The top of the Corniferous was at 4,823 feet. The Sandy Elk Oil & Gas Co. is 8 feet in the Oriskany sand in the test on the Perry Moles Heirs farm. The depth is 4,969 feet. The Columbian Carbon Co. is drilling the following: Everett Copenhaver at 1,602 feet; Genevieve Minsker, at 1,682 feet; Maggie Given, at 1,667 feet; Jeff Medley, spudding at 50 feet; C. W. Vickers, at 1,540 feet; Susan I. Givens, building rig. Godfrey L. Cabot, Inc., is down 3,128 feet on the R. L. Bibby farm. The Hays Oil & Gas Co. is drilling at 3,310 feet on the John Judy Heirs farm. Starchers and others are shut down at 1,360 feet on the G. W. Wolf farm.

In Malden district, Owens-Illinois Glass Co. is down 4,890 feet on the C. Q. Crockett farm. The United Fuel Gas Co. is fishing at 740 feet on the George Creek Land & Mining Co. No. 4,679. Godfrey L. Cabot, Inc., is drilling at 1,855 feet on the No. 2 Plus R. Levi; 860 feet on William Tompkins Heirs No. 9; 1,082 feet on the Nellie B. Tompkins No. 4; and 913 feet on the Campbells Creek Coal Co. No. 11. The Columbian Carbon Co. is drilling at 1,524 feet on the W. D. Lewis No. 15.

PIPE LINE TAILOR

C. F. Gray, superintendent of Nowata and Skiatook districts, Stanolind Pipe Line Co., calls himself a tailor, since he followed this trade for seven years at Caney, Kans., where he made clothes for men under whom he later worked after he became a pipe liner in 1914. Starting in the gang, he was a gang pusher in three months and was soon transferred to the engine room at Blake station on the Sinclair-Cudahy pipe line, where he was successively oiler, engineer and chief engineer. In 1921 he was put in charge of the gathering system in the Nowata field, while the system belonged to Sinclair Pipe Line Co. After it was acquired by the Stanolind Pipe Line Co., the Skiatook district was also placed under his supervision.

Texas Gas Law to High Court

AUSTIN, Tex., Oct. 12.—Attorney General William McCraw has filed in the supreme court of the United States a brief for the state and railroad commission in the Consolidated Gas Utilities Corp. and Texoma Natural Gas Co. case.

Right of the commission to prorate gas in the Panhandle and other fields under the anti-gas-waste House Bill No. 266 is involved. The pipe line companies obtained injunction soon after effectiveness of the act. A three-judge federal court at Houston made permanent the injunctions, from which the state appealed.

Madden Hill, assistant attorney general, said the case probably would be called for argument during the week of November 9.

Construction given the statute by the lower court in holding it did not empower the commission to restrict production for the purpose of protecting the correlative rights of land and lease owners in the field is attacked in the brief which contended by plain terms of the act, history of the legislation and by provisions of existing laws the intent of the legislature was evident to provide for restricting production and distributing allowable among all producers for protection of correlative rights irrespective of existence of waste.

The brief also asserted the statute involved and the orders issued by the commission were sustainable as true waste measures as their necessary operation will be to prevent water intrusion, channeling and loss of gas through a cutting off of gas by water intruding into the structures, and in an ultimate recovery of tremendous quantities of gas that would be lost were proration not in effect.

Gas Rate Cut Upheld

AUSTIN, Tex., Oct. 12.—The supreme court has refused the appeal of the Lone Star Gas Co. from a judgment of the court of civil appeals upholding a commission order cutting the gate rate over the company's Texas lines from 40 cents to 32 cents per 1,000 feet.

The court also refused to interfere with a lower court judgment which sustained reduction of the Laredo gas rate from 75 cents to 55 cents per 1,000 feet. United Gas Co. was the appellant.

It sent back for retrial a case involving the gate rate of Spearman, served by the Public Service Corp. of Texas. The commission had ordered the rate reduced from 30 to 27 cents.

"Hundreds of Texas cities and towns will, by this decision, be enabled to get reduced gas rates," Ernest O. Thompson, chairman of the railroad commission, said. "It defines the powers of the commission and strengthens our fight to bring fair gas rates to the people of Texas."

OIL TERMINALS PURCHASING WESTERN OIL'S PROPERTIES

Oil Terminals, Inc., is preparing to complete purchase of the wharf and landing facilities, refinery and pipe lines formerly operated by the Western Oil & Refining Co. in the Wilmington area, Los Angeles, Calif. The refinery has a capacity of 10,000 bbls. daily. A pipe line runs to Signal Hill.

H. H. Whitesel, head of Oil Terminals, Inc., has been long in the oil business, first with Sierra Refining, then Marine Oil, later Sunset Pacific and Sunset Oil. He was northwestern manager for the last-named oil company until recently. It is reported that he plans a completely rounded-out oil company, from crude production to marketing, in the near future. The harbor department has granted a permit covering five years to Oil Terminals, Inc., to operate premises formerly occupied by Western Oil & Refining Co.

GASOLINE CONSUMPTION IS AT NEW PEAK IN ENGLAND

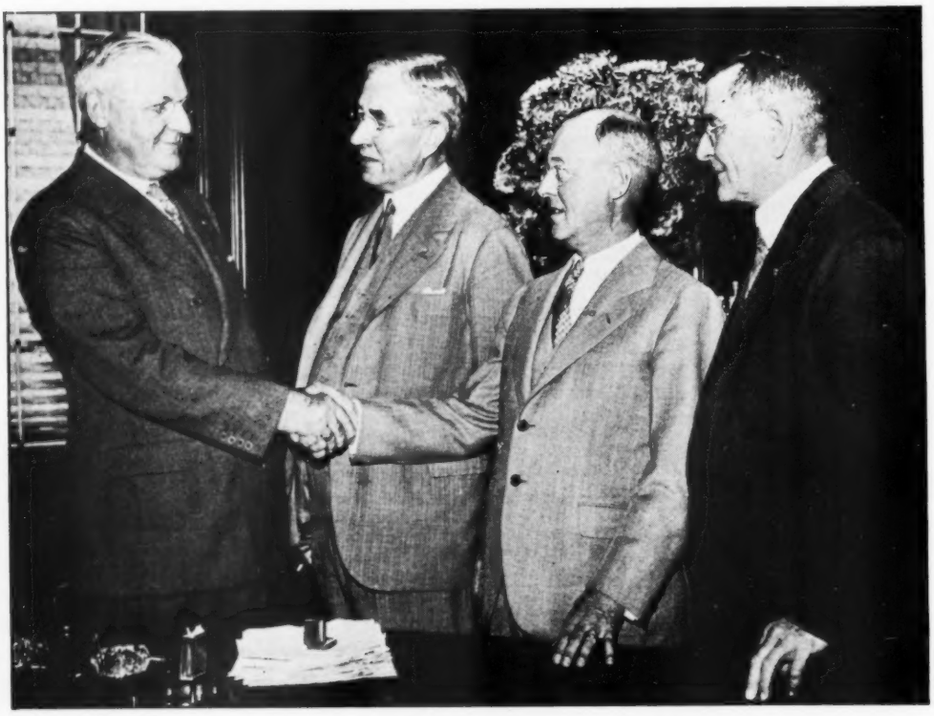
Automobile registrations and consumption of gasoline and lubricating oils are at new peaks in England, according to W. J. Burningham, managing director of Arthur Brown & Co., of London, who is in Tulsa studying refinery technique at the West Tulsa plant of the Mid-Continent Petroleum Corp. Mr. Burningham, whose company represents the Mid-Continent in the sale of lubricating oils abroad, was accompanied to the United States by Roger D. King, of Paris, managing director of the Abco Petroleum Corp., and N. L. Melluish, a director of the Arthur Brown organization.

Devaluation of the franc will create a tremendous increase in exports with a consequent speeding up of manufacturing plants in all parts of France, Mr. King said. The export markets have been opened widely for France with a cheaper franc and its goods can be purchased to better advantage. Gasoline and oil consumption has picked up in France in the past three months, but previously it had been steadily going down, said Mr. King. Consequently, France with 15 refineries of which five make lubricating oils, has not recovered all of the ground lost but it is only a matter of time when consumption will regain former high levels.

AVERAGE STATION PRICE

The average retail or service-station price of regular grade (middle octane) motor fuel registered a decline during September, according to figures based on pump prices of gasoline in 50 cities throughout the United States. On October 1, the average was 14.11 cents a gallon compared with 14.22 cents on September 1, exclusive of all state, federal and municipal taxes. The October 1 composite price was .69 cent higher than that of a year ago and .41 cent over that of January 1, 1936. The decline was due to reductions in prices throughout the central states and in some of the eastern states, the prices in the midwestern and western states remaining practically unchanged.

NINETY YEARS OF CONTINUOUS SERVICE



Left to right: E. G. Seubert, Allan Jackson, C. J. Barkdull and R. H. McElroy

Rounding out a combined total of 90 years of continuous service three directors of Standard Oil Co. (Indiana) received gold pins from President Edward G. Seubert (October 6). Charles J. Barkdull, executive vice president, has completed 20 years of service this year, R. H. McElroy, vice president in charge of traffic, has reached the 30-year mark; and Allan Jackson, vice president in charge of sales, has become eligible for the diamond-studded pin that designates 40 years.

To signalize the event President Seubert called all three directors and pinned on their lapels, with appropriate comments, the service pins of their respective classes.

Mr. Jackson looked back on a beginning in 1896 as private secretary to the general manager of sales and on long years of advancement through positions of gradually increasing responsibility to the commanding position he has occupied for 16 years in the company's sales. To R. H. McElroy the event marked another milestone in a career of handling the company's movement of products from the day back in 1906 when he became chief rate clerk after preliminary experience with a railroad. The third member of the group, C. J. Barkdull, was employed originally in 1907 as a member of the accounting department and after a break in his connection returned to the company and rose to the vice presidency which carries a large share of responsibility.

All Standard employes receive service pins as they complete 10-year periods of employment.

RISING USE OF DIESEL OIL NECESSITATES EXTRA LINE

The Panama Canal authorities, besides approving expenditure of $102,000 for construction of diesel-oil loading facilities at piers 15, 16 and 18 at Balboa, have authorized spending $78,000 for installing an extra diesel-oil line at Cristobal. At present there is a single line at piers 7 and 8 for loading both light and heavy diesel oil.

Increasing demand at Cristobal for light diesel oil for bunkering, together with the regular requests for heavy diesel oil, has necessitated the handling of two distinct grades of oil through one pipe line. The present line, from Mount Hope to the Cristobal docks, is about 2 miles long, and holds about 1,500 bbls. of oil.

When a vessel docks at pier 7 or 8, Cristobal, it is either obliged to accept 1,500 bbls. of the heavy oil in the line before being able to receive the desired light oil, or shift to dock 16 for the light oil, a movement which involves extra cost and loss of time.

The improved facilities will consist of a 10-inch diesel-oil line from the manifold at the Mount Hope oil handling plant to pier 7, and an 8-inch line with 12 risers of 6-inch pipe and valves placed along the north face of pier 8. A report made by the marine division in support of the improvement showed that 48 per cent of the world's tonnage now uses fuel oil for propulsion and that 17.42 per cent is using diesel oil.

PETROLEUM ELECTRIC POWER CLUB PROGRAM FOR ANNUAL MEETING

The eighth annual meeting of the Petroleum Electric Power Club will be held at Hotel Texas, Fort Worth, Tex., October 14, 15 and 16. The program follows:

Wednesday, October 14, 4 to 6 p.m., registration; 6:30 p.m., group get-together meeting.

Thursday, October 15, 9:30 a.m., welcome address, J. B. Thomas, Texas Electric Service Co. Progress report. Business meeting. Appointment of committees. Treasurer's report. Report of nominating committee. Report of constitution committee. Engine Competition, C. H. Purdy, Consumers Power Co., Jackson, Mich.

2 p.m., election of directors. Industrial Power Sales, W. H. Hodges, vice president and manager, sales and advertising department, Byllesby Engineering & Management Corp., Chicago. Cooperative Advertising, W. H. Stueve, Oklahoma Gas & Electric Co., Oklahoma City.

Friday, October 16, 9:30 a.m., Recognition of Central Power Committee of A.P.I. Recognition of Petroleum Industry Electric Association. Round table discussions: "Oil Well Drilling," led by G. H. Weckel, Kansas Gas & Electric Co., Wichita, Kans.; "Oil Well Pumping," led by J. E. Elliott, Southwestern Gas & Electric Co., Shreveport, La.

2 p.m., Purchased Electric Power and Oil Refineries, speaker to be selected. Round table discussions: "Oil Refineries," led by E. L. Robinson, Gulf States Utilities Co., Beaumont, Tex.; "Pipe Line Pumping," led by C. N. Robinson, Public Service Co. of Oklahoma, Tulsa.

SCHOOL GETS LUBE OIL UNIT

The school of petroleum engineering at the University of Oklahoma soon will have new equipment which includes a lubricating oil unit for the university refinery, a supercentrifuge, a cold room, and two new automobile motors. This will enable students to study the application of distillation, heat transfer, flow of fluids, filtration, absorption and combustion, to the manufacture of lubricating oil.

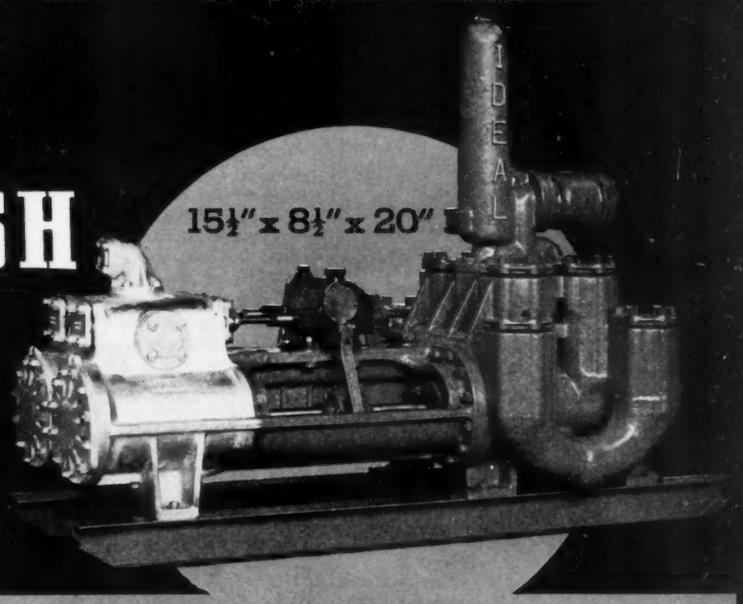
CANADA TURNS TO IOWA PLAN

Imperial Oil will discontinue company operation of 80 service stations in Toronto and get out of the retailer business in Canada. Forty stations in Toronto already have been leased and the remainder soon will be. Other large oil companies are leasing service stations.

IDEAL

"Reg. U. S. Pat. Off."

STEAM SLUSH PUMPS . .



In Rodessa, as well as other deep fields, these pumps are making remarkable records.

National's engineers have combined sturdy design with many advanced engineering features . . .

STREAMLINED WATER END

★

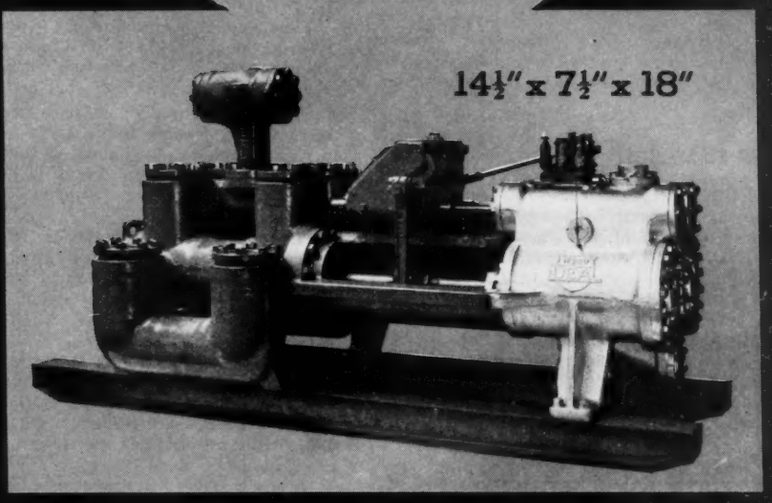
LARGE VALVES

★

IMPROVED STEAM END

★

AUTOMATICALLY LUBRICATED, TOTALLY ENCLOSED, PATENTED, ROCK SHAFT STAND



Bulletins descriptive of Ideal Slush Pumps are available upon request.

THE NATIONAL SUPPLY COMPANY

NSCO
"REG. U. S. PAT. OFF."

National

ACTION TO EJECT 15 MAJOR OIL COMPANIES IS REVIVED

The Supreme Court of Texas in Austin has granted a writ of error and agreed to review litigation in the suit seeking to eject 15 major oil companies from the state on the ground that they have violated the state's antitrust laws, whose constitutionality now is at issue. The action, instituted by Gov. James V. Allred when he was attorney general, contended the defendants were conspiring to control the marketing of gasoline and other oil products and to injure independent operators of service stations. It was dismissed by a district court on the ground that the antitrust laws had been superseded by the NRA. The state appealed from the ruling.

The court of appeals later affirmed the decision of the lower court, holding all the state's antitrust laws unconstitutional in that they were in contravention of the "equal protection of the laws" clause of the fourteenth amendment to the federal constitution. The ruling was based on the fact that the penal code of Texas exempts agricultural products and livestock, while in the hands of the producer, from the provisions of the antitrust laws, thus setting up unreasonable discrimination between classes and nullifying all the state's antitrust laws.

The writ of error granted by the Supreme Court does not affect the merits of the appeal, but expresses only the court's willingness to assume jurisdiction and review the case, which is expected to reach the Supreme Court of the United States.

YATES FIELD SUIT

AUSTIN, Tex., Oct. 12.—The supreme court has agreed to review litigation involving title to about 260 acres of land in the heart of the rich Yates field, West Texas. It granted writs of error sought by the Stanolind Oil & Gas Co. and several other defendants sued by the state, whose claim the land was vacant was overruled by the district court at Pecos. The El Paso court of civil appeals reversed the trial court, sending the case back for new hearing. The state also claims more than $1,000,000 worth of oil produced from the land.

SERVICE STATIONS ACQUIRED

A new independent service-station group has been formed to operate throughout Westchester County, New York, and southern Connecticut as Mayflower Stations, Inc. The organization, headed by Glenn L. Werly, president, and Parker Perry, has acquired a group of important service station locations, formerly operated by the Socony-Vacuum Oil Co.

THE MARKETS*

CRUDE OIL: *Refiners so far absorbing current production of more than 3,000,000 bbls. daily. Reports show heavy reductions in crude storage latter part of September. Buyers report very little free crude available with preparations under way to transport Texas and Louisiana crude north by pipe line next year.*

REFINERY: *Both advances and reductions were reported the past week in gasoline tankcar quotations. Some refining areas are still withdrawing from storage to supply current demand for gasoline while others have started storage programs. Markets for residual fuels, distillates and kerosenes generally strong and prices higher wherever changes have been made.*

TANK-WAGON AND SERVICE STATION: *Scattered gasoline price reductions in southeastern states.*

FINANCIAL: *Oil stocks follow upward trend of general market. Ten stocks pass previous highs for 1936. Average for 30 average stocks: High, 37.07; low, 35.07; close, 36.61. Week ending October 3: High, 35.52; low, 33.82; close, 35.30.*

**Detailed information in Market Section.*

PETROLEUM CREDIT EXECUTIVES MEET AT EXCELSIOR SPRINGS

The annual conference of the Petroleum Division, National Association of Credit Men, will meet at the Elms Hotel, Excelsior Springs, Mo., November 5, 6 and 7.

This conference, which has been meeting for more than 10 years, has come to occupy an important place in the minds of the credit executives of the petroleum industry. The meetings have become representative of the industry from coast to coast.

The meeting is under the direction and supervision of the following board of governors: E. W. Hesse, chairman, Phillips Petroleum Co., Bartlesville, Okla.; O. W. Crick, vice chairman, Danciger Oil Refining Co., Tulsa; H. E. Butcher, Cities Service Oil Co., Chicago, Ill.; Webb R. Charles, Globe Oil & Refining Co., Wichita, Kans.; J. D. Powell, Skelly Oil Co., Kansas City, Mo.; W. L. Reed, Shell Petroleum Corp., St. Louis, Mo., and W. M. Watson, Socony-Vacuum Oil Co., Inc., New York. R. A. Colliton is secretary of the national association.

A study of present-day economics as it relates to present-day business and credit will occupy a prominent place on the program. Facts, figures, and data relating to credit sales, profits, and volume will be presented and studied in detail. All recent legislation relating to or having an effect on credit will be presented and studied. The annual dinner will be held Friday evening. Credit executives in all branches of the petroleum industry are invited to attend.

JUDGE "APPALLED" BY FEES ASKED IN RICHFIELD CASE

A hearing last week on the petition of various protective committees involved in the Richfield Oil Co. of California and Pan American Petroleum Corp. receiverships and reorganization for $885,650 fees and expenses was continued to November 4 by U. S. District Judge James. The fees and expenses were sought by the various committees prior to an application for transfer of the estate into bankruptcy receivership preparatory to reorganization of the companies under a plan submitted by the Consolidated Oil Co.

Former Secretary of War Patrick J. Hurley, attorney for the Rio Grande Oil Co., argued that the court should not be asked to approve the fees and expenses until the benefit derived from the services of the attorneys can be finally determined and the reorganization plan has been presented to the court. He contended that to allow the plan to be "dragged in by the back door" in the hearing on fees is inappropriate and premature.

Judge James then said he concurred in the opinions expressed by Mr. Hurley. The jurist said he was appalled at first by the size of the fees and expenses sought. He indicated the lawyers may expect reductions.

RULE AFFECTING ROYALTIES IS CHANGED BY COMMISSION

The Securities and Exchange Commission has amended Rule 320 under the Securities Act of 1933, setting forth conditions under which fractional oil and gas interests may be sold by issuers or dealers without formal registration. The rule as amended makes it unnecessary for any issuer or dealer to deliver offering sheets in cases of sales to dealers registered as such with the commission under the Securities Exchange Act of 1934, provided that if the purchasing dealer is not a resident of the state in which the oil or gas property is located, the seller must furnish the commission with a sales report on a new Form 2-G, within 15 days after the sale is made.

The amendment provides a similar exemption in cases of sales to corporations or trusts not registered as dealers with the commission, provided their assets consist primarily of oil and gas rights and provided their securities are registered under the Securities Act of 1933. The amendment further provides an exemption from the necessity of delivering offering sheets or sales reports in any case of a sale to an oil or gas producing company.

DEFENDS ROYALTY TAX LAW

Attorney General William McCraw, of Texas, went to Washington, D. C., this week to argue before the U. S. Supreme Court a case involving the legality of the state's tax of 2 per cent on oil production. Trustees of the estate of Mrs. M. M. Cook attacked the constitutionality of the law in an appeal from the state court decisions. The tax yields about $8,000,000 annually. The point at issue is the provision attempting to make royalty owners liable for their equitable share of the levy. The precedent involved, Mr. McCraw said, will affect oil production taxes in Louisiana, Oklahoma and New Mexico.

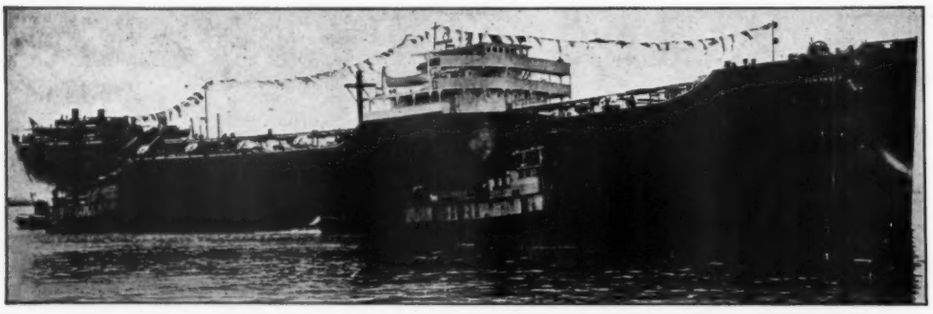
HOPE TO STOP PRICE WARS

The Petroleum Marketers Association, Inc., has been organized in Oklahoma City, Okla., with H. F. Currier as president, with the object of stabilizing gasoline prices. The membership is composed of service station operators.

PACIFIC WESTERN CHANGE

LOS ANGELES, Calif., Oct. 12.—In a move to simplify its corporate structure and decrease tax liabilities Pacific Western Oil Corp. has dissolved its operating subsidiary, Pacific Western Oil Co., and taken over all assets and liabilities.

FIRST OF FOUR TANKERS COSTING $7,400,000



BALTIMORE, Md., Oct. 12.—The new oil tanker Pan-Amoco being built for the American Oil Co. by Pan American Petroleum & Transport Co. at the yards of Sun Shipbuilding & Dry Dock Co. was launched recently at Chester, Pa. The ship was christened by Mrs. Jacob Blaustein, wife of the president of American Oil Co. and daughter-in-law of Louis Blaustein, its founder and board chairman.

The ceremony was witnessed by officials of American Oil Co., Pan American Petroleum & Transport Co. and Sun Shipbuilding & Dry Dock Co. The entire board of the Pan American Petroleum & Transport Co. was present: E. G. Seubert, C. J. Barkdull, L. L. Stephens, R. E. Wilson, E. G. McKeever, J. A. Carroll, Jr., Louis Blaustein, Jacob Blaustein and Alvin Thalheimer.

The Pan-Amoco is the first of four oil tankers for which the company placed order last December at an approximate cost of $7,400,000.

What's the best 40 - Horse VERTICAL ?

Producers say it's TYPE G-SD

— and Here's Why:

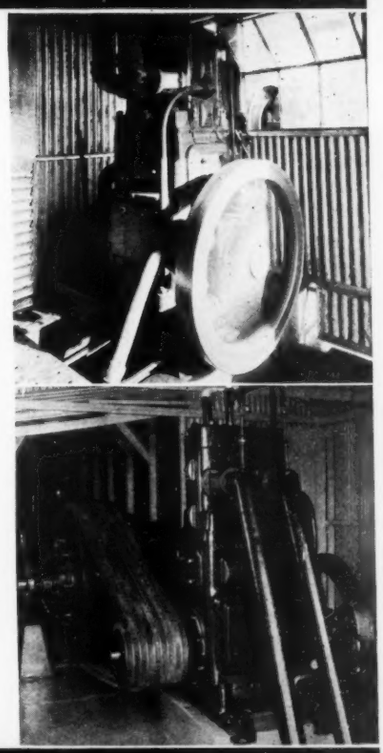
EASY TO START—either by hand or by air; equipped with Timken main roller bearings.

EASY ON LUBE OIL—crosshead construction cuts oil consumption.

EASY ON FUEL—crosshead construction gives better scavenging and operating economy.

EASY ON UPKEEP—two-cycle, two-cylinder type, operating at medium speed. Die-forged crankshafts and connecting rods. Pressure lubrication to all bearings, including wrist pins. Crank-pin bearings are inexpensive, replaceable precision shells. Main bearings are Timkens.

ALL THESE field-proved features (and many more) are covered in "BULLETIN TYPE G-SD." If you're interested in pumping more oil, for more years, at less cost—you'll send for this bulletin. Better still, call for a Cooper-Bessemer representative.



THE COOPER-BESSEMER CORPORATION

Mt. Vernon, Ohio — PLANTS — Grove City, Pennsylvania

25 West 43rd Street, New York City — Mills Building, Washington, D. C. — 640 East 61st Street, Los Angeles, Calif. — 201 East 1st Street, Tulsa, Oklahoma — 631 Spring Street, Shreveport, La. — Magnolia Bldg., Dallas, Texas — Esperson Bldg., Houston, Texas

L. W. Rogers, 6 Finsbury Square, London, E. C. 2

They like it

Independent gasoline dealers may set motor fuel prices from now on—but they can't set quality standards

The motorists do that They won't buy gasoline they don't like

Motorists buy Dubbscracked gasoline —when they can get it—and pay the price for it It's hard to sell them ordinary gasoline at all

Dubbscracked gasoline is profitable for the refiner to make and for the retailer to sell

Because it is profitable for the motorist to use—and he likes it

Universal Oil Products Co
Chicago Illinois

Dubbs Cracking Process
Owner and Licensor

Vigorous Discussion at A.I.M.E Fall Meeting in Fort Worth

By L. E. BREDBERG

FORT WORTH, Tex., Oct. 12.—Vigorous discussion of many of the papers presented marked the fall meeting of the petroleum division of the A.I.M.E. in Fort Worth last week. The paper on "Economics and Well Spacing in Texas," by W. E. Hubbard, Humble Oil & Refining Co., Houston, held that existing proration methods had given small tracts an arbitrary value out of all proportion to their intrinsic worth. Whatever the group this system is designed to assist, he declared it unsound. Competitive bidding ultimately raises the price of such tracts to a point commensurate with this artificial yield.

Citing the Gulf Coast, West Texas (Permian Basin), East Texas and two districts from Southwest Texas, he showed they had an increase of allowable of 184,000 bbls. during three years, while average well allowables had dropped 53 per cent. He said that of the 184,000-bbl. increase for the five areas, 29,000 bbls. had come from increased demand for the state and the rest had been squeezed out of the remaining areas.

PER WELL ALLOWABLES

Per well allowables in Texas, he said, have dropped at an alarming rate during the past three years and it appears no well can be allotted more than the marginal allowance for its depth within a comparatively short time. Excess reserves are so large, he said, that price stability is maintained only by proration. Current proration formulas do not prorate on the basis of either the rule of capture or oil in place. Proration on oil in place or the same equity, coupled with wide spacing rules, was, he believed, a sound solution.

R. E. Hardwicke, attorney of Fort Worth, denounced the drilling of so many wells in the East Texas field, saying 15,000 more wells had been drilled than necessary, costing the companies around $225,000,000. Unnecessary wells, he said, made it more difficult to regulate production, caused lower allowables (per well) and longer pay-outs. To stop it, he said, a campaign should be carried to the public, the Independent Petroleum Association already taking action to prevent the drilling of unnecessary wells, and the American Petroleum Institute also expected to attack the problem. He said the courts would be tolerant toward regulating drilling, already knowing much about this problem, but the regulatory bodies in the different states must be convinced that many wells are unnecessary.

Paul Weaver, Gulf Oil Corp., advanced a theory that heaving shale is caused by high-pressure oil in small reservoirs not connected with the general hydrostatic circulation, which reservoirs have a pressure greater than the hydrostatic pressure corresponding to their depth. Methods of dealing with it were suggested by Mr. Weaver and by Doctor Vietti, Texas Co., Houston, who said his company found using sodium silicate and salt in the mud was the most successful method so far, pressures maintained in drilling also playing an important part in drilling through such shales. Mr. Weaver thought the principal advance made by the equipment manufacturing companies to handle heaving shale was the continuous circulating joint which offset troubles caused when working continually in the same place, such as milling on a casing shoe, which often caused heaving shale troubles.

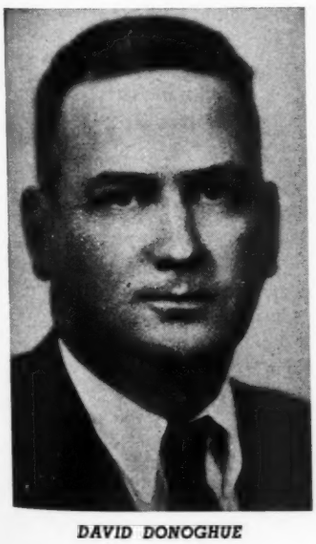
SAM GREENIDGE
General Chairman, Convention Committee

Papers were presented by John Farmer, Otis Pressure Control, Inc., on "Some Features of Pressure Control While Drilling"; by R. L. Huntington, University of Oklahoma, on "Estimation of Oil and Gas Reserves," and by Morris Muskat, Gulf Research Corp., on "Use of Data on the Build-Up of Bottom-Hole Pressure," all of which are published in this issue of The Oil and Gas Journal. J. F. Kendrick, Sullivan Machinery Co., read a paper on "The Sucker-Rod Pump As a Problem in Elasticity"; J. J. Zorichak, Stanolind Oil & Gas Co., one on "Control of Water in Pumping Wells," and Eugene A. Stephenson, Missouri School of Mines, one on "Acreage and Potential Factors in Allocation."

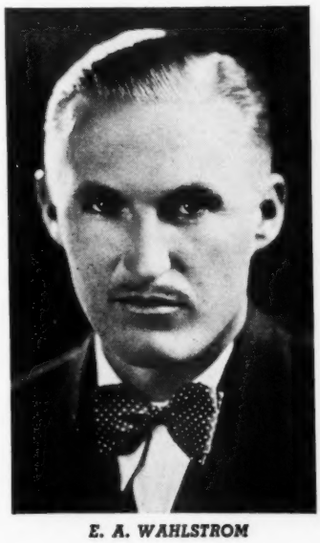
Many have been of the opinion there has been no method evolved by which the flow of fluids through sands could be studied and efficiently prognosticated, but Prof. F. B. Plummer, and J. S. Woodward, both with the University of Texas at Austin, presented slides to show equipment invented and set up for making such experiments.

ENGINEERING EDUCATION

Three papers on engineering education were presented by Prof. L. U. Uren, University of California; Dean R. L. Langenheim, Tulsa University, and W. W. Scott, Humble Oil & Refining Co. Professor Uren's paper was entitled "Petroleum Engineering Education"; Mr. Langenheim's on "Combination Field Work and Class Work," and Mr. Scott's on "Petroleum Engineering Education." These papers brought out far more questions and a greater amount of discussion than expected taking up much of the Friday afternoon session time. Some advocated more time for the preparation of engineers for their vocation, while



DAVID DONOGHUE



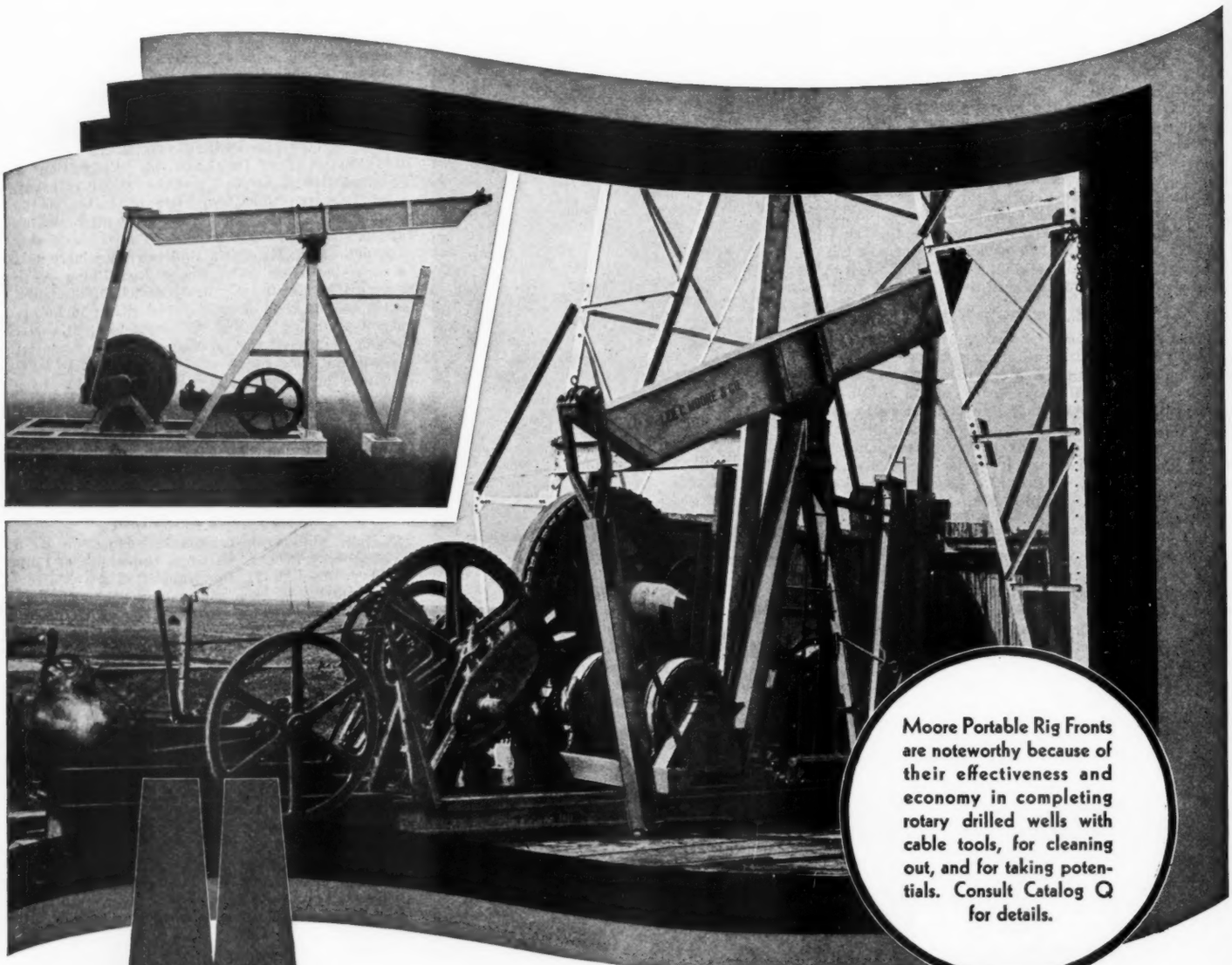
E. A. WAHLSTROM

L. A. OGDEN

R. B. KELLY

CALL IN A MOORE MAN

Moore representatives are helpful because they know field conditions and how to meet them



Moore Portable Rig Fronts are noteworthy because of their effectiveness and economy in completing rotary drilled wells with cable tools, for cleaning out, and for taking potentials. Consult Catalog Q for details.

LEE C. MOORE & CO., INC. · Tulsa · Pittsburgh

Member Steel Derrick Manufacturers Association

Corpus Christi . . . Dallas . . . Houston . . . Henderson . . . Kilgore . . . Longview . . . Midland
Odessa . . . Pampa . . . Wichita Falls, Texas . . . Chase . . . McPherson . . . Russell . . . Wichita, Kansas

STOCKS IN ALL ACTIVE FIELDS

DERRICKS PUMPING EQUIPMENT Moore

others advocated specializing of studies with specified time being allotted to suit the specialization, some advocating four-, five- and six-year courses for the various types of engineers.

METALLURGY

Papers pertaining to metallurgy were read by Doctor Vietti for H. M. Wilten, Texas Co., and H. K. Ihrig, Globe Steel Tubes Co. Mr. Wilten's paper dealt with the "Status of Steel and Alloy Steel Tubing in Oil Refinery Heat Exchanger Practice." Mr. Ihrig's paper was on "A Method of Rendering Ferrous Metals Heat, Corrosion, and Wear Resistant by Impregnation With Silicon."

John M. Lovejoy, New York, president of the A.I.M.E., and the Seaboard Oil Co., addressed the group at the Friday luncheon. Since 1930, he said,

R. D. GOODRICH
President, Rio Oil Corp.

the industry had discovered about as much oil as taken out of the ground, with the exception of this year when new discoveries had fallen short of previous years. He said the oil business was reasonably stable, this situation being obtained by modifying the rule of capture which in turn is being brought about by well-spacing rules which will eventually stop unnecessary drilling, such drilling creating diminishing allowables for all in the business. He thought this problem will eventually correct itself.

Discussing gas caps and fields such as Kettleman Hills and the Rodessa field, he said allowables should be reduced and the residue gas produced with the oil returned to the producing formations to hold up the bottom-hole pressure which will help keep the wells flowing and enable the operators to get a greater ultimate yield.

George Otis Smith, former president of the institute, former director of the U. S. Geological Survey and former chairman of the Federal Power Commission, also spoke.

A. D. Parson, secretary of the institute, reported more than 650 members had been added recently and that the petroleum section of the institute had shown a far greater increase than other sections.

Sam Greenidge, Texas Pacific Coal & Oil Co., Fort Worth, and his arrangements committee, were thanked for the profitable and entertaining meeting. Chairman Greenidge's associates on the committee were: E. A. Wahlstrom, David Donoghue, L. A. Ogden, R. B. Kelly and R. D. Goodrich.

Magnetic Storm

TUCSON, Ariz., Oct. 12.—Moderate storm began October 9, one ended October 10, fourteen, Central Time.

Service Stations Reduce Perils of the Motorist

ATLANTIC CITY, N. J., Oct. 9.—"The service station salesman contributes more of practical value to the safe operation of motor vehicles today than does any other individual," declared General Baird H. Markham, director of the American Industries Committee, in an address before the petroleum section of the twenty-fifth national safety congress, which closed here today.

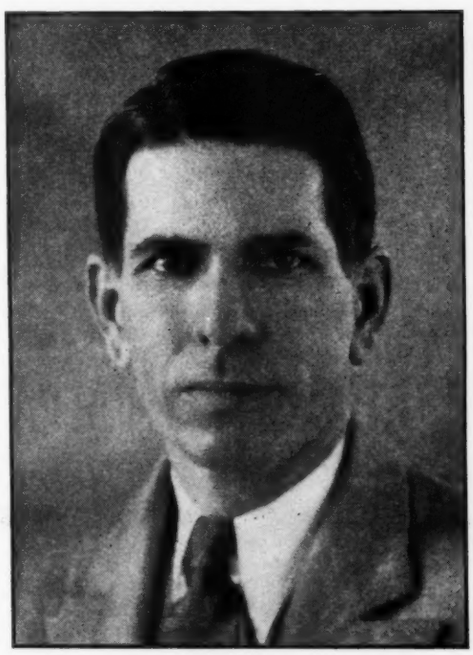
"I believe also," continued General Markham, "that in establishing service stations beside the highway, oil companies are rendering a service to motorists and to safety equivalent to that of the lighthouses which guide travelers at sea. We sometimes overlook the service station salesman's practical contributions to highway safety both because they are so practical and because we have become accustomed to accepting them as a matter of course. He cleans our windshield, essential to adequate vision and to safety. He pumps our tires to proper pressure, a real aid to safe driving and a precaution that we ourselves too frequently forget. He tests our storage-battery and adds water, another necessary protection against emergencies. All these are simple tasks, yet essential to safe operation of the motor vehicle.

"The service station salesman gives us information as to highway and weather conditions, warns us against danger spots, advises us as to routes, and otherwise forewarns us. Finally, he collects from us a certain amount of taxes, usually equivalent to or even more than his own profit, for the stated purposes of financing safe and adequate highways."

Like some of the other speakers, General Markham pointed out that although the highway user is heavily taxed to finance safe highways, much of the revenue is being used for other purposes, with the result that highway development fails to keep pace with motor vehicle registration.

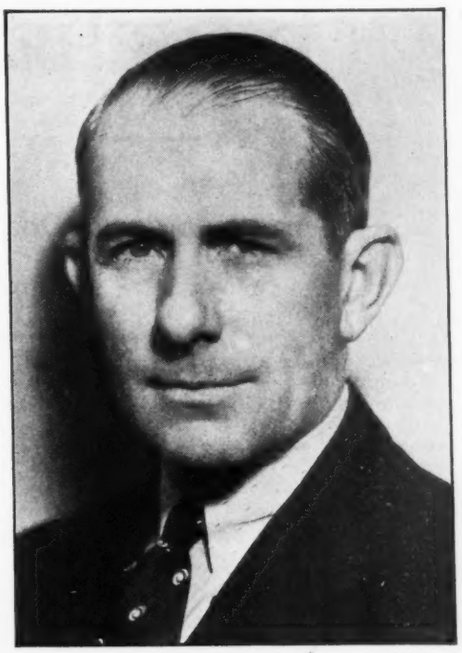
All meetings of the petroleum section, which began last Monday, were held in the Ambassador hotel. R. B. Roaper, Humble Oil & Refining Co., Houston, Tex., was general chairman, and A. W. Breeland, Lone Star Co., Dallas, Tex., vice chairman.

Twenty-four oil company units out of 219 entered in the petroleum section safety contest,



A. W. BREELAND

sponsored by the National Safety Council, went through the six months' period from January 1 to June 30 without a lost-time accident. First-prize plaques and second- and third-place certificates were presented to winners in seven general



R. B. ROAPER

divisions, manufacturing, marketing, drilling, producing, natural gasoline, pipe lines, and tankers.

Awards were made for the lowest-frequency rates (number of disabling injuries per million hours worked). The average frequency rate for the 219 units entered was 14.091. A "disabling injury" was defined by contest rules as any injury arising out of and in the course of employment, resulting in death, permanent total disability, permanent partial disability or temporary disability. Under the rules "injuries" were classed as those in which the victim was unable to return to work at the beginning of the next day following the mishap. In the six months' period 222,714 employees of the various entries worked 239,434,543 man-hours.

"If all the money motor-vehicle operators pay out in gasoline taxes were spent intelligently for the building of roads adapted to the needs of the communities they are to serve, safe highways would soon be the rule everywhere throughout the country," said H. N. Blakeslee, director of the American Petroleum Institute's department of accident prevention. "Unfortunately, diversion of gasoline-tax funds to other purposes is depriving car owners of a large part of the protection for which they are paying. Highways cannot truly be said to be safe so long as it is necessary to mark them with such signs as 'Danger,' 'Sharp Curve," "Narrow Bridge," or other signs warning there is danger. Railroad enginemen are expected to operate their trains safely, but every effort has been made to provide them with safe operating conditions, the best possible roadbed and the elimination of every danger spot.

"Motor-vehicle, or driver, accident-prevention problems are more serious in the United States than anywhere else in the world. With but 7 per cent of the world's population, we own and operate 76 per cent of the world's automobiles.

'STARCOR' DID THE TRICK!

16-lb. Slurry, Down 6000 Ft. - - - and Only 800 lbs. Pump Pressure

SIXTEEN-POUND cement slurry easily pumpable in a well over 6000 ft. deep! That was 'STARCOR'S contribution to the successful shut-off of United Gas Company's Harris No. 3 at Rodessa.

There was 6002 feet of 7" O. D. casing in a 9⅞" hole. Circulation of 10.3-lb. mud started at 11:35 p.m., June 26th. Mud circulation stopped at 12:05, and the first of 1000 sacks of 'STARCOR' was dumped into the hopper. Seven tests with mud-weigher gave slurry weights ranging from 15.3 to 16.8 lbs., averaging 15.9 lbs.

Real Pumpability!

Cement pumps stopped at 12:51, the plug released and mud pumps started at 12:56 a.m. Mud circulation pressure was 700 lbs.; but, when the plug hit the collar and 'STARCOR' was in place, pump pressure was only 800 lbs. That's pumpability—15.9-lb. slurry down 6000 feet at a temperature of 195° F.—and only 800 lbs. pump pressure!

Three days later, on the night of June 29th, core was drilled out. Driller's report said it was the hardest cement he ever drilled and there weren't any soft spots.

What Cuttings Show

Chemical analyses of the cuttings were practically the same, item for item, as that of the original cement. How's that for freedom from mud contamination?

That's because 'STARCOR' is a true Portland cement, made without admixtures—specially designed for use in deep oil wells. Lone Star research chemists, who perfected 'Incor' 24-Hour Cement, tackled the problem of producing a cement to do these four things and do them well:

(1) Set slowly at high temperatures; (2) pump easily in a heavy slurry, and stay gel-like under all conditions so as to resist mud contamination; (3) develop high strength at early ages; and (4) give a long-life shut-off even in the presence of sulphate waters. In a word, an Oil Man's cement.

'STARCOR' is the answer. And performance in wells of many Texas and Louisiana producers has more than lived up to these basic requirements—well after well has come in safely and easily.

Use 'Starcor' Next Time

Your Lone Star and 'Incor'* cement dealer can get 'STARCOR' to you on short notice. Use a real Oil Man's cement—see it you don't agree that 'STARCOR'† is a step ahead. Made and sold by Lone Star Cement Company Texas, Dallas...Houston.

*Reg. U. S. Pat. Off. †Pat. Applied For

LONE STAR CEMENT COMPANY TEXAS

Makers of LONE STAR CEMENT • 'INCOR' 24-HOUR CEMENT • 'STARCOR' CEMENT

Oil News from Foreign Lands

Mexican Mining Bill

Measures compelling mining concerns, which in Mexico includes oil companies, to invest at least 25 per cent of their profits within the republic and assessment of 5 per cent royalty on gross income will be introduced shortly in the Mexican congress. This information is conveyed from Mexico City where a convention of small-scale miners passed resolutions providing for those changes in the Mexican mining laws. If congress enacts measures levying a royalty of 5 per cent on gross income of mining companies those concerns would be relieved of other taxes, which, however, do not equal the revenue expected from the proposed assessment.

MEXICO

Information from Mexico City indicates that the proposed mining law changes will not reach the statute books for some time, but that serious consideration will be paid to them as a measure in keeping with the government's program on labor matters. Also proposed for congressional consideration is a provision requiring mining companies to make permanent any construction on land held under concession. In the event of abandonment of mining projects the law is designed to make buildings and works available for cooperatives or government grants to workers.

Venezuelan Production Up

Venezuelan crude oil production continued to set new records during September climbing to a peak of 13,596,476 bbls., or 453,217 bbls. daily for the month. La Rosa-Ambrosia staged the largest increase. The district's production of 1,839,064 bbls. for September was 77,051 bbls. over the August yield. Quiriquire with a gain of 64,864 bbls. to a total of 2,165,792 bbls. and Mene Grande with an increase of 42,700 bbls. to a total of 1,519,600 bbls. for the month contributed to the overall gain. All other Venezuelan fields, Lagunillas, El Mene, Terra, La Paz, Concepcion and Cumarebo dropped slightly.

VENEZUELA

Production from properties of Lago and Standard of Venezuela, subsidiaries of Standard of New Jersey, increased nearly 1,000,000 bbls. for September. Lago's production of 4,379,451 bbls. was 448,628 bbls. above the August yield and Standard of Venezuela gained 476,979 bbls. to a total of 2,743,219 bbls. for the month. Caribbean's production of 1,519,600 bbls. was an increase of 212,590 bbls. over the August record. Venezuela Oil Concessions, Ltd., Venezuela Gulf and Colon had decreases ranging up to 157,000 bbls.

The daily average production for September of 453,217 bbls. was an increase of 16,600 bbls. over August output of 436,617 bbls. and compared with 422,114 bbls. for the same month in 1935. The production statistics follow:

VENEZUELA CRUDE PRODUCTION

By fields—	Sept. production 1936	Daily average Sept., 1936	Sept. production 1935	Daily average Sept., 1935
Lagunillas	7,357,014	245,234	7,099,279	236,642
La Rosa-Ambrosia	1,839,064	61,302	1,860,480	62,016
Mene Grande	1,519,600	50,653	1,307,010	43,567
El Mene	69,240	2,308	65,880	2,196
Terra	339,400	11,314	410,130	13,671
La Paz	11,900	397	13,050	435
Concepcion	89,800	2,994	117,210	3,907
Cumarebo	204,666	6,823	185,713	6,191
Quiriquire	2,165,792	72,192	1,605,591	53,519
Totals	13,596,476	453,217	12,664,343	422,114
By companies—				
Lago Pet. Co.	4,379,451	145,981	3,930,823	131,028
Venezuela Oil Concessions	3,224,400	107,480	3,277,260	109,242
Standard of Venezuela*	2,743,219	91,441	2,266,240	75,542
Caribbean	1,519,600	50,653	1,307,010	43,568
Colon	339,400	11;314	410,130	13,671
Venezuela Gulf Oil Co.	1,270,000	42,334	1,427,000	47,567
British Controlled.	69,240	2,308	65,880	2,196
North Venezuela Pet. Co.	51,166	1,706	(†)	(†)
Totals	13,596,476	453,217	12,664,343	422,114

*Includes Creole share in La Rosa and Lagunillas.
†Included for 1935 in Standard of Venezuela (Creole) production.

VENEZUELA PRODUCTION BY MONTHS

Month—	Dly. av. 1936	Dly. av. 1935	Dly. av. 1934
September	453,217	422,114	402,543
August	436,617	414,700	394,620
July	433,329	415,582	386,342
June	393,328	424,411	373,435
May	427,195	401,743	372,333
April	427,441	382,378	376,333
March	418,905	371,900	351,630
February	431,234	390,020	348,900
January	417,179	405,156	350,270

Well in Switzerland

Production of nearly 200 bbls. of oil per day at peak output from a test well near Lake Neuchatel in Switzerland has been reported from American Counsel General A. C. Frost's office at Zurich. The oil was encountered at approximately 1,500 feet. The report did not include details on how long the rate of yield was sustained.

Italy Reduces Oil Tax

The Italian internal sales tax on crude oil and refined petroleum products was reduced for the second time this year by decree-law on September 12. A substantial reduction was made on July 21. In view of Italy's general devaluation step and substantial reductions made on imported commodities in general, it is probable reductions even below those set up September 12 will be announced in the near future. The new and old taxes on crude and refined oils follow:

ITALY

	Per 100 kilos— Sept. 12 tax	July 21 tax
Crude oil	75 lire	120 lire
Transformer oil	90 lire	125 lire
Lubricating oil	75 lire	115 lire
Kerosene	120 lire	195 lire
Gasoline	161 lire	240 lire
Other crude	130 lire	205 lire

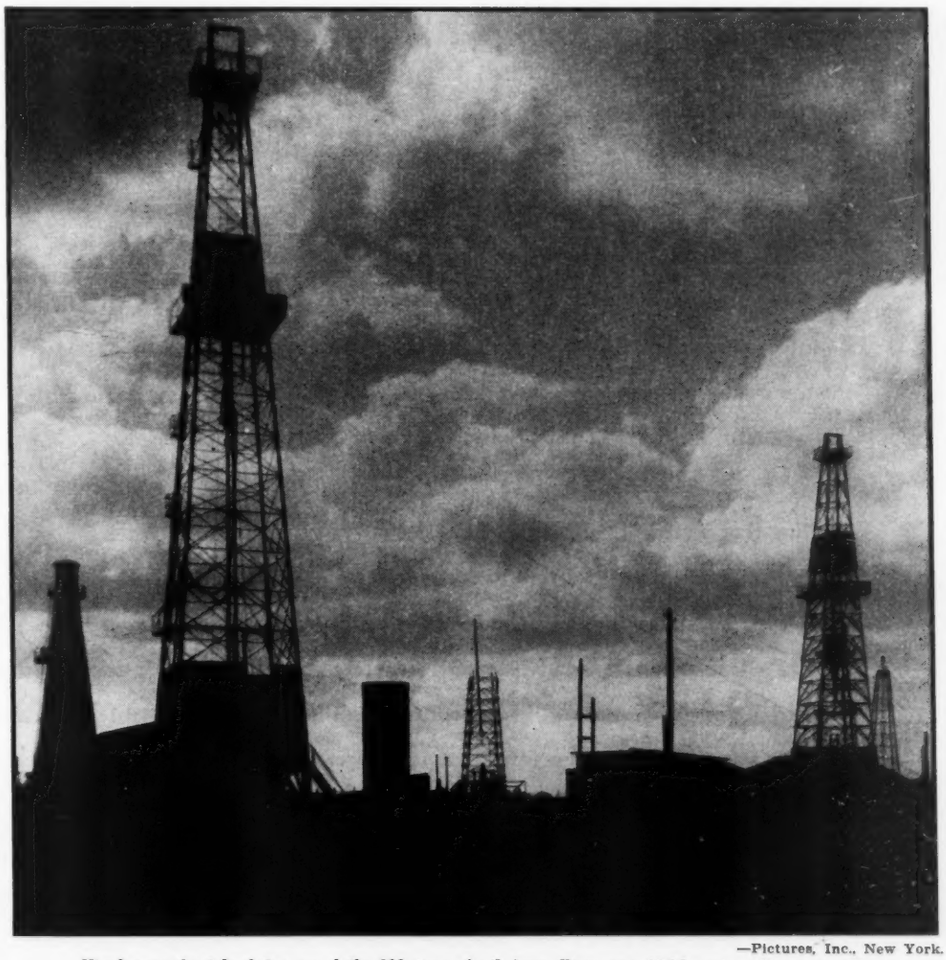
Distilled products to be used directly as fuels having a density of from 0.850 to 0.880 at 15° C. are now assessed at 60 lire per 100 kilos, compared to the old levy of 115 lire. Products of a density in excess of 0.880 at 15° C., are now levied at 30 lire per 100 kilos against 65 lire previously. Other by-products are assessed at 75 lire per 100 kilos against the old rate of 120 lire.

New Refinery Unit in Wales

A combination atmospheric and vacuum distillation unit with capacity of 8,750 bbls. of crude oil per day and capable of producing a full range of products will be constructed at National Oil Refineries, Ltd.'s Llandarcy plant, near Swansea, South Wales. The National company is a subsidiary of Anglo-Iranian Oil Co.

GREAT BRITAIN

Orders for approximately $500,000 worth of equipment have been placed. Construction work on the plant included in the present program will require nearly a year for completion.



—Pictures, Inc., New York.

Nienhagen derricks bring up daily 200 tons of oil from Krug von Nidda mine, Hanover. This production is unprecedented in Germany

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by THE PETROLEUM PUBLISHING COMPANY at Tulsa, Oklahoma

P. C. LAUINGER, President
C. O. WILLSON, Editor
W. T. ANDERSON, Managing Editor
JAMES McINTYRE, Consulting Editor
W. T. ZIEGENHAIN, Engineering Editor
L. G. E. BIGNELL, Prod. Engr. Editor
C. K. FRANCIS, Ph. D., Technical Editor
DAL DALRYMPLE, Associate Editor
T. F. SMILEY, Associate Editor
D. H. STORMONT, Associate Editor
M. F. BALDWIN, Circulation Manager
S. H. ROURKE, Business Manager
Victor Lauriston, Box 136, Chatham, Ont. CANADA
Tolbert R. Ingram, 130 State Office Bldg. DENVER
L. E. Bredberg, 617 Petroleum Bldg. FORT WORTH
Neil Williams, 809 Sterling Bldg. HOUSTON
L. P. Stockman, 313 Union Oil Bldg. LOS ANGELES
Mitchell Tucker, 717 City Bank Bldg. SHREVEPORT
P. A. Elliott, Chronicle Bldg. MUSKEGON
H. Stanley Norman, 415 Lexington Ave. NEW YORK CITY
George Weber, 809 Sterling Bldg. HOUSTON
John O'Donnell, Derrick Bldg. OIL CITY
George A. Whitney, P. O. Box 98 TOLEDO
Hugh D. Mallon, 808 Investment Bldg. WASHINGTON

Advertising: E. KLAPPENBACH, Manager

C. L. Cain, 415 Lexington Avenue, NEW YORK CITY
Howard Markt, 802 Leader Bldg. CLEVELAND
C. R. Farmer, 616 S. Michigan Avenue, CHICAGO
Wayne Rives, 809 Sterling Bldg. HOUSTON
K. J. Langley, 114 W. Second Street, TULSA
J. H. Tinkham, 1406 S. Grand Ave. LOS ANGELES

A Sane Balance

The suggestion that the demand for fuel oil as well as the demand for gasoline should be considered in computing the Bureau of Mines estimates of crude oil production should not overemphasize the fuel oil market.

Unquestionably fuel oil has its place in the petroleum picture but that must not obscure the fact that the main object is to supply motor fuel and if refiners operate their refineries to supply fuel oil during the season of maximum consumption they will inevitably produce more motor fuel than they should and it will go into storage and hang over their market throughout the motor fuel consuming season.

There was no better illustration of this than last winter and early spring. Part of the excess stocks of gasoline that were built up during that period was due to the desire of refiners to supply fuel oil demand.

This does not mean that the industry should discourage the utilization of petroleum as fuel but the trend over a period of time will be to confine that utilization to consumers who can afford to pay more for a superior fuel.

There is a lot of difference from the standpoint of the industry in the utilization of fuel oil for domestic heating where its cleanliness, automatic service and heat efficiency entitle it to consideration as a superior fuel in contrast to burning it under boilers for the generation of steam in areas where cheap coal is available.

There is a preferential use for petroleum. It is well known that certain of these cheaper uses were the result of the long period of overproduction and must eventually pass as the industry returns to a sound basis of operation. Petroleum is too valuable for so many other purposes to be practically wasted in uses which can be just as well served by inferior fuels.

It is far better that the industry sacrifice that market which adds nothing to the profits of the industry than to try to supply it and in doing so overproduce products for which the whole country relies on the oil industry.

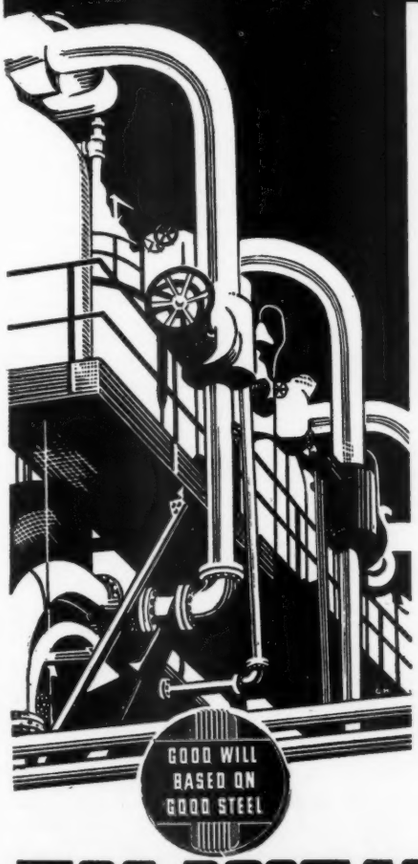
There is enough flexibility in refinery operations to supply the seasonal demand for petroleum products outside of the lowest priced product for which a market was picked up during the depression on a more or less dumping basis which disregarded the potential value of petroleum for superior uses and utilized it in competition with the cheapest type of coal.

The industry is not going to lose anything by giving up that market which could not be held in normal conditions. The industry's profits comes from markets which can afford to pay better prices.

Why waste the corn to save the husks?

TIMKEN TUBES

FOR EVERY PHASE OF REFINERY SERVICE



The complete range of Timken Refinery Tubes covers every type of refinery application. Their quality characteristics represent definite savings in maintenance and service.

Timken refinery tube steels include all the standard analyses as well as special analyses developed by Timken metallurgical engineers for specific uses where standard steels do not measure up to Timken performance requirements.

Timken Refinery Tubes are produced in a modern plant where scientific quality control leaves nothing to chance — where every operation from the raw material to the finished tubes is under the direct supervision of Timken technical men.

It will pay you to specify Timken Tubes on your next order.

THE TIMKEN STEEL & TUBE COMPANY, CANTON, OHIO

District Offices or Representation in the following cities: Detroit Chicago New York Los Angeles Boston Philadelphia Houston Buffalo Rochester Syracuse Tulsa Cleveland Erie Dallas Kansas City St. Louis Cincinnati Huntington Pittsburgh Minneapolis *World's Largest Producer of Electric Furnace Steel*

TIMKEN STEEL TUBES

ELECTRIC FURNACE AND OPEN HEARTH • ALL STANDARD AND SPECIAL ANALYSES

Excavating for foundations for the 340-horsepower diesel and the 6 by 18 horizontal pump to be installed at the Strang pumping station near Pryor, Oklahoma

Gulf Increases I
Adding Loops o

By PAUL REED

In carrying out the program to increase pipe line capacity by 20 per cent between Oklahoma and Ohio terminals, the Gulf Refining Co. is looping approximately a third of the line, adding a unit at 12 stations, and making extensions at the stations in accordance with plans which provided for advances in pipe line practice made when the line was laid in 1930.

Work is under way to prepare for the installation of the new unit at each of the 12 stations on the line between Strang, Okla., and Greenwood, Ind. The addition of this equipment is going along in conjunction with the looping of the line to the extent of 287.57 miles of the 732 miles between Jenks, Okla., and Adgate, Ohio (9 miles from Lima), where the Gulf connects with the Buckeye pipe line.

Model, showing tanks and connections, can be unhooked from the wall and laid on the ground where work is being done. It seems more convincing than a blue print. Black wires with brass labels indicate lines; condensed milk and snuff cans represent working and fuel tanks. On the instrument board are clock, electric gauge indicator, and pressure gauge

This program is significant for the heavy machinery industry, since it entails one of the largest if not the largest purchase of diesel engines and pumps made in the last five years. Each of the 12 new units is to be powered by a 340-horsepower Busch-Sulzer diesel running at 257 r.p.m. At present each of these stations has two units which were installed when the line was built in 1930. Each of the present units is powered with smaller engines running at a slower speed. These are 316-horsepower diesels running at 225 r.p.m. Pumps of the units are to be of the same size and make as those now in service at these stations: 6-inch by 18-inch Worthington horizontal triplex double-acting plunger pumps. The line is to be operated at 700 pounds pressure at full capacity.

The stations where these units are to be installed are on the part of the Gulf pipe line running north from Jenks, Okla., pumping oil for destinations at Toledo, Cincinnati and Pittsburgh. These 12 stations are located at Strang, Okla.; Anderson, Monett, Strafford, Lebanon and Steelville in Missouri; Valmeyer, Breese, Edgewood and West York in Illinois, and Jordan and Greenwood in Indiana.

The accompanying pictures were taken at the Strang station, which is representative of these 12 intermediate stations between the terminals at Jenks, Okla., and Dublin, Ind. Construction work now in progress is in connection with building concrete foundations and adding a 28-foot extension to the present building of steel frame and brick with roofing of corrugated asbestos.

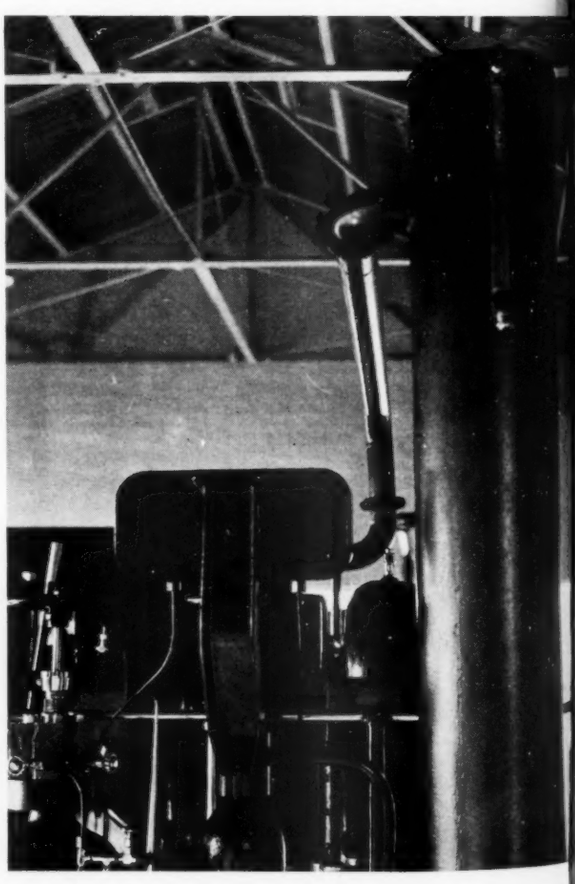
At the Strang station there are to be seen the various types of auxiliary equipment which are characteristic of the advances made in modern pipe line practice.

The cooling system for the engines is of the inclosed type, housed entirely within the main building where there is no danger of freezing even when the station is shut down in cold weather. The cooling system for each engine takes less than 20 bbls. of water; little make-up water is required and scaling is practically eliminated. These stations were among the first to adopt this practice of cooling the cooling water by means of crude oil pumped through a heat exchanger. A single-pass heat exchanger is used, containing 104 three-fourths inch (outside diameter) by 16-foot drawn seamless steel tubes with a surface of about 326 square feet, which transfers heat from the cooling water to the oil being pumped. Water from the engine jackets passes to a 20-inch standpipe, with an opening in the top, acting as a surge-tank, from which it is pumped by a centrifugal pump to the outside pass of the heat exchanger which is located close to the outside wall of the pump room. From the heat exchanger, the water passes to header below the engine cylinders. A sight glass shows the water level in the standpipe at all times. Regulation of the water temperature is accomplished, without cutting down the flow through the engine jacket, by means of a by-pass around the heat exchanger.

Crude oil entering the station through the 8-inch line flows to a 600 g.p.m., 1,200 r.p.m. centrifugal pump, located on the pump-room side of the dividing wall, but mounted on the same base and driven by the same shaft driving the water circulating pump. From the centrifugal pump the oil moves to the inside pass of the heat exchanger and from here it moves to the suction header of the main pumps. The head produced by the centrifugal pump compensates for the head loss through the heat exchanger and feeds the main pumps continuously with a positive head. Heat exchanger heads are attached to the shell with Victualic-type couplings, making the inside of the tubes readily accessible for cleaning and inspection.

At these stations, heat transfer problems connected with the centrifuging of lubricating oil have been given careful consideration. Since the

Surge tank in the cooling system which receives hot water from the engine and permits bubbles to escape from the water before being pumped to the outside pass of the heat exchanger

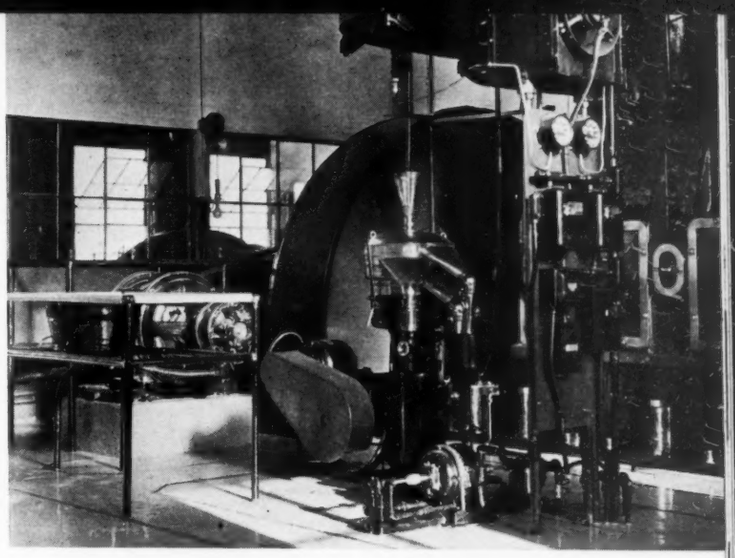


efficiency of the centrifugal purifier can be definitely increased by lowering the viscosity of the lubricating oil by heating and thereby facilitating the extraction of fine particles from the oil, the problem of heating the oil before it goes to the purifier and the problem of cooling it before it returns to the engine are closely connected with the effective use of centrifugal purification.

The temperature of the lubricating oil coming from the engine is raised to 180° F. in a 15 square-foot heat exchanger located above the purifier. Heat is furnished by water circulating between the exchanger and a jacket around an exhaust pipe. Pressure is maintained on this heating system and the water reaches a temperature above its boiling point. Hot water from the jacketed exhaust is circulated through the oil heater by a motor-driven centrifugal pump. Hot oil passes from the heater to the purifier and on being discharged from the purifier passes into an inclosed hopper which retains vapors from the heated oil. The discharge streams can be observed through look glasses.

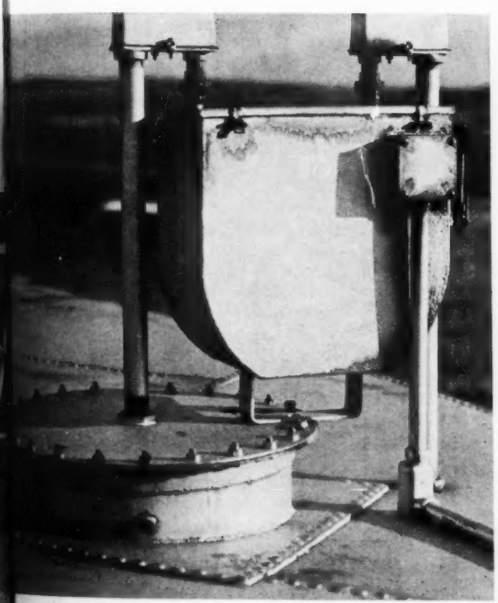
of welded steel pipe, which has been especially designed for the convenience of station engineers. The table is high enough to easily receive the bowl when it is removed from the purifier; it is large enough to readily hold discs and other parts while cleaning is being done. A slight depression of the surface of the table top prevents oil from slopping over on the floor and is readily wiped off after cleaning is over.

The centrifugal oil purifier, placed between the two engines, may be used to clean the oil of either engine and the system is



Centrifugal lubricating oil purifier and the blower type cooler. The pump room can be seen through the windows in the fire wall separating the two rooms

s Line Capacity, s and Equipment



Electric gauging equipment on the roof of the working tank. The gauge records the height of the oil in barrels

so arranged that, by means of interlocking cocks, the oil must return to the engine from which it came. Lubricating oil from the engine is supplied to the purifier from the upstream side of the oil storage tank through a motor-driven rotary pump; pumping through the oil heater already mentioned.

In the office of each of these pipe line stations there are instruments within easy reach of the operator to indicate the amount of oil being handled. Venturi meters were installed to measure the incoming stream. These show the rate of flow in barrels per hour and make a continuous chart record of the rate of flow. Automatic, electric depth-gauges show the height of oil in the working tank on a dial, calibrated in barrels, near that of the Venturi meter. The amount of oil received at the station is determined hourly by reading the meter and the amount pumped is readily calculated by adding or subtracting from this amount any change in the contents of the working tank, which acts as a surge tank on the line. Gauge-pole measurements are taken at the working tank several times a day to check the height of the oil in the tank. These are necessary since the readings of the electrical gauging device indicate the rise and fall of the float above and below a determined point.

During the past summer 10½ miles of loop line were laid at different points to equalize the capacities of certain stations.

At the present time surveys are being made and right of ways taken for the 287 miles of 10-inch line which will loop the present 10-inch main line. Starting as it will in October, much of the work of laying the line will be done under cold weather conditions. No important river crossings will be made. The two loops laid across the Mississippi River six years ago provide the capacity required at that point.

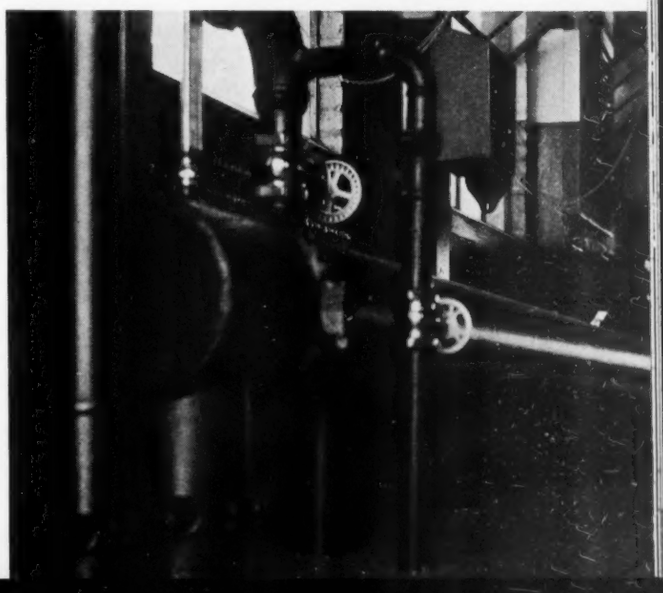
The work of constructing foundations and extending the buildings at these stations is being done by the Austin Co., Cleveland, Ohio, who built the present stations six years ago. The original plans were drawn up so that additions and extensions could be readily made when the time should arrive for increasing the capacity of the line. The Austin Co. is having the work done by two sets of crews, one starting at Greenwood, Ind., and moving southwest and the other starting at Strang, Okla., moving northeast. The crew digging foundations at Strang will go to Anderson, Mo., and will be followed by another crew. Several crews carrying on the work at different stages will be used to complete the work in this way.

In addition to the installation of new engines and pumps, mentioned above, a 316-horsepower McIntosh & Seymour is being moved from Ten Mile station near Antlers, Okla., to the station at Dublin, Ind.

The 12 stations where a third unit is to be added are identical in design and equipment. Each station is located on 40 acres of ground and may be considered to consist of station building, warehouses, water tower, working and fuel tanks and cottages.

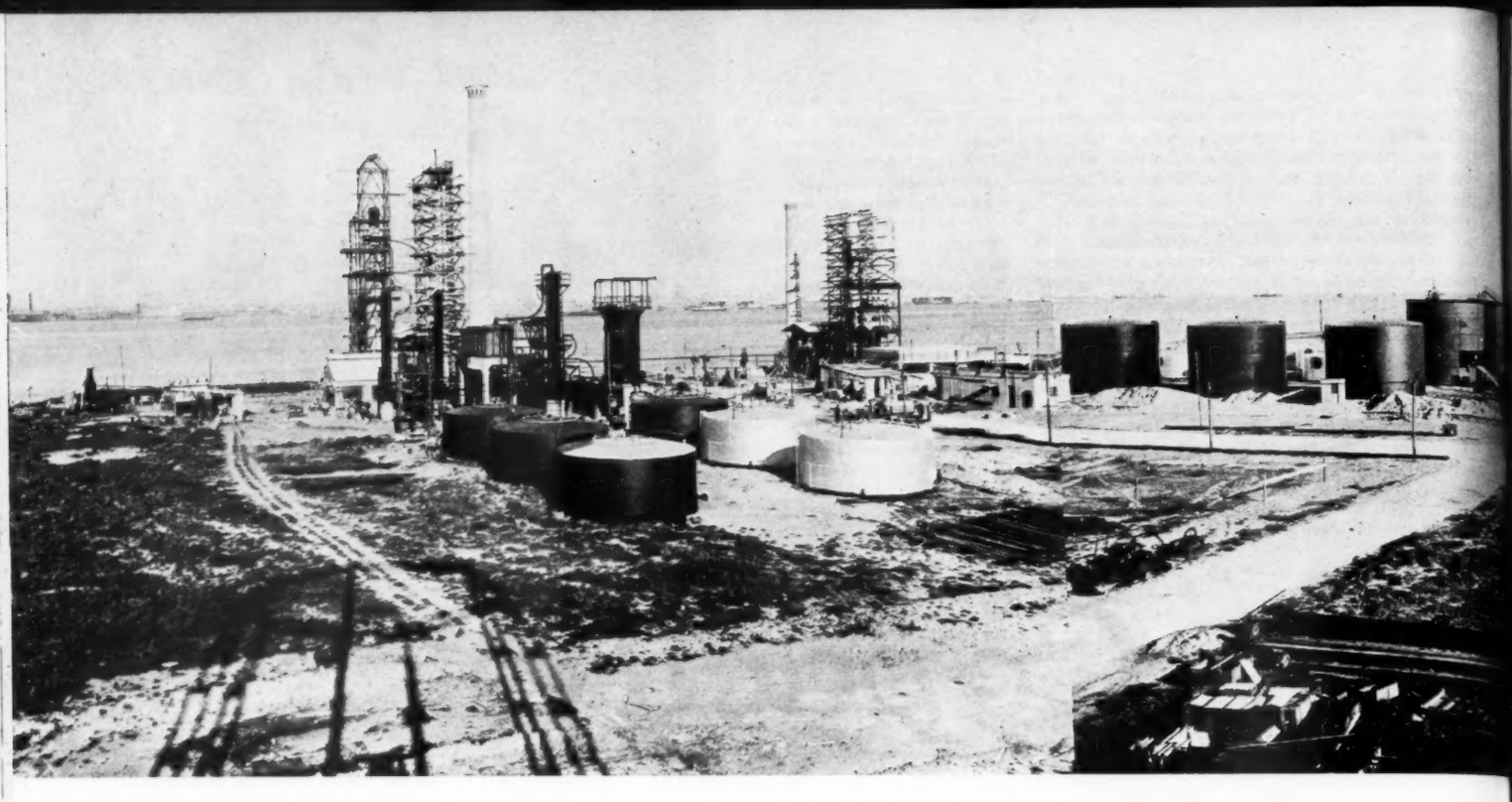
The stations are built with pump and engine rooms separated by a partition covered on both sides with flat iron sheets. Large glass windows in the partition extending the full length of the building afford the engineer in charge an unobstructed view of all machinery from any part of the building. The windows are of plain quarter-inch wire glass set in steel sash. Heating is done by six radiators equipped with three-speed fans, which run at 1,140, 950 and 720 r.p.m.

Heat exchanger for cooling engine cooling-water with incoming crude oil from main trunk line



This hot, clean oil is cooled before returning to the engines by passing through an air-cooled unit heater with an equivalent direct radiation rating of 400 square feet. This cooler is of radiator type and cooling is accomplished by a three-speed fan. This cooling unit is similar in construction to the heating units used to heat the building in winter. This cooler takes the place of the usual water cooler and gives less trouble in operation.

The purifier is usually operated 22 hours out of a 24-hour day when the engines are running continuously. The purifier is driven by a 2-horsepower, 440-volt motor. The capacity of the purifier is 225 gallons per hour. It has a dirt-holding capacity of 125 cubic inches. Provision is made for lightening the job of cleaning the bowl of the machine by furnishing a metal topped table, made



Construction of New Refinery in Uruguay Well Under Way

Designed to operate on 41 gravity, Ecuadorian crude, Administracion Nacional de Combustibles, Alcohol y Portland, commonly known in Uruguay as A.N.C.A.P., is completing a new refinery at La Teja, on Montevido Bay, Uruguay. The A.N.C.A.P. is an autonomous institution of the Uruguayan government and is the administrator of the state monopolies of alcohol and crude oil refining, also controlling in Uruguay the market of fuels obtained from the distillation of crude oil. Therefore, to comply with its monoply of crude refining the company in 1935 began construction of its refinery.

As yet there are no oil-producing fields in Uruguay and as a consequence the A.N.C.A.P. will process Ecuadorian crude oil in its refinery. The crude has been tested and the laboratory analysis was as shown in Table 1.

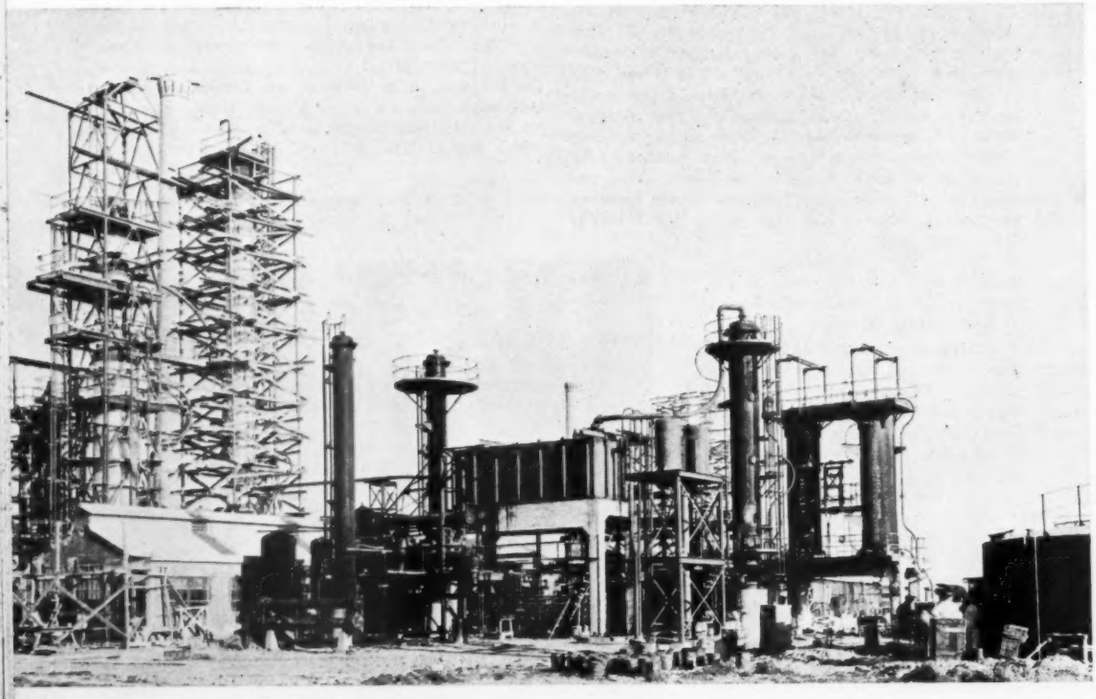
The refinery is composed of a topping unit; cracking unit (Dubbs system); unit for treatment of gasoline in the liquid stage; unit for alkaline treatment of gasoline; kerosene treating unit; central chemical station; gas holder and gas distribution equipment; steam generating station; main pumphouse; fire defense station and the electrical equipment for the whole refinery.

The exceptional quality of the Ecuadorian crude to be treated in the refinery makes unnecessary the use of the acid treatment unit for the cracked gasoline. However, A.N.C.A.P. has reserved the right to install it should they work with another crude.

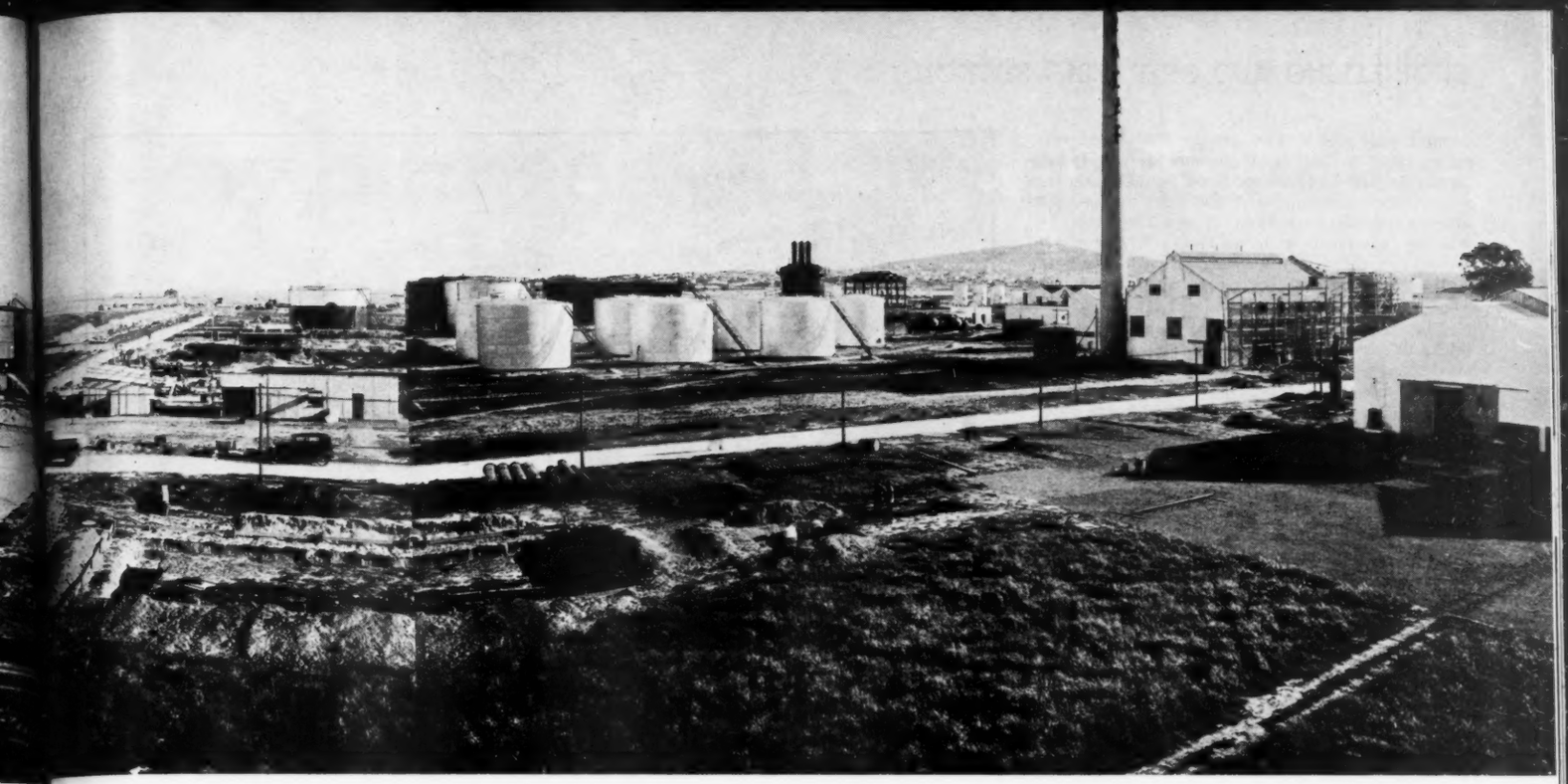
A large number of tanks will be necessary for the refinery operations (nine tanks, 1,500 cubic meters each, 10 tanks 500 cubic meters and 14 tanks 120 cubic meters), as well as interconnection pipes. The normal functioning of the refinery pumps will be assured by the use of electric power by all the units, alternative steam-power being provided at points where needed.

The materials for the different units mentioned above have been delivered CIF Montevideo together with all the machinery and equipment for the complete installation of the refinery, the 33 service and storage tanks, the connecting pipes from the limits of the units to the tanks or to the limits of other units, the electric installation and outside light for the same, the complete drainage system and sanitary works as well as the tank for separating products.

The foundation and erection work of the units and equipment for the refinery have been carried out by the A.N.C.A.P. with Uruguayan staff and workmen.

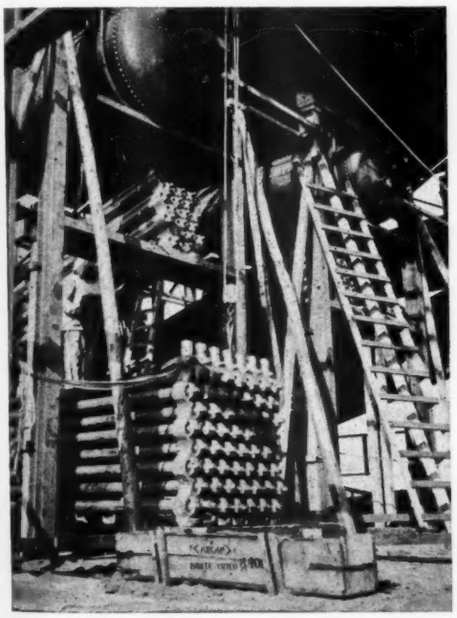


Cracking unit and fractioning equipment in A.N.C.A.P.'s new La Teja refinery



Panoramic view of the A.N.C.A.P. refinery now being completed at La Teja, on Montevideo Bay, Uruguay

The primary distilling unit performs the first distillation to which the petroleum is submitted and will have a capacity to yield, on a normal and continuous running, the amount of 600 cubic meters of crude petroleum per day of 24 hours. It will work independently from the cracking unit and will consist of the following principal parts:



Installing tubes in the new boilers

1. A Foster Wheeler furnace of the radiation and convection type, with a loading capacity of 600 cubic meters per 24-hour day and a convection heating surface of 257 square meters and a radiation heating surface of 62 square meters. The water heater will be placed in the convection bank and will be composed of six steel tubes. The fire chamber will be constructed of refractory bricks and also the smoke conductors and the chimney. Peabody burners for gas and fuel-oil will be used.

2. An atmospheric fractionating tower 16 meters high over the platform with 16 bubble trays over the input tray and 4 below it. It will have five plates, vapor extractors, etc. All full diameter bubble trays, and also the stripping trays will be complete with bubble caps and downcomers. Working pressure will be 0.2 to 0.3 kilograms per square centimeter.

3. A combined water separator and reflux supply tank, which will work with atmospheric pressure.

4. Heat exchangers, condensers and coolers will be of the shell and tube floating head type, with removable tube bundle.

5. Vapor heat exchanger with a total surface of 165 square meters.

6. Vapor condenser with a total surface of 294 square meters.

7. Bottoms heat exchanger with a total surface of 51 square meters.

8. Kerosene cooler with a total surface of 24 square meters.

9. Gas oil cooler with a total surface of 24 square meters.

10. Residuum cooler with a total surface of 31 square meters.

11. Pump electrically driven centrifugal and a steam reciprocating pump for charging.

12. Electric centrifugal pump and a steam reciprocating pump for reflux.

13. Electrical centrifugal pump and a steam reciprocating pump for residuum.

The charging and reflux pumps will be the cold-oil type of cast iron construction and the bottom pumps will be of the hot-oil type of cast steel construction, with extra-long water-cooled stuffing boxes. The unit will have all the control elements necessary.

The yield of the topping unit for the Ecuador crude to be treated will be the following: Gasoline, 38 per cent; kerosene, 19 per cent; gas-oil 12 per cent; fuel-oil, 30 per cent; gas and losses (maximum) 1 per cent. This unit is provided with a chimney of reinforced concrete 25 meters high.

TABLE 1—ANALYSIS OF CRUDE

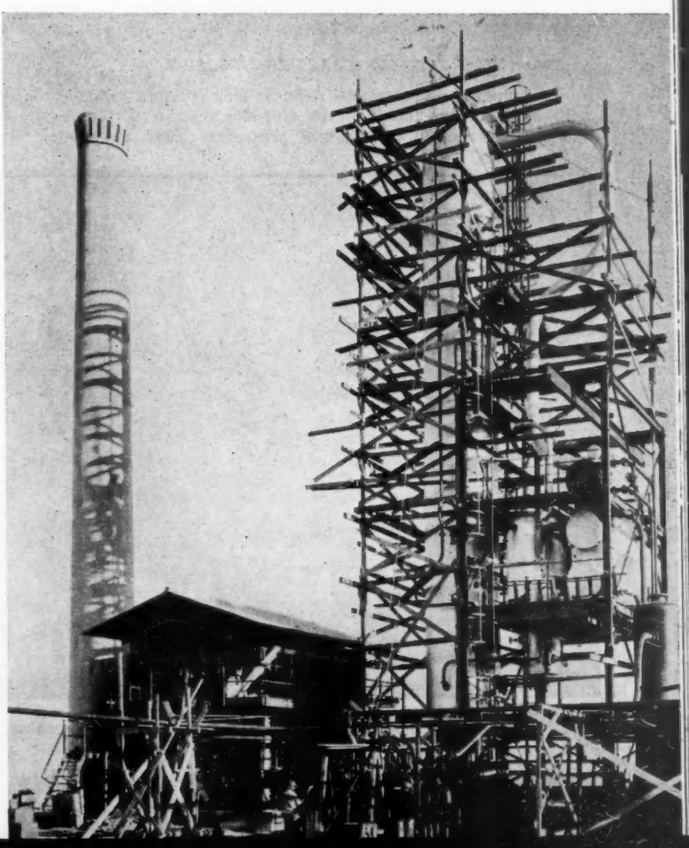
Specific gravity at 15.6° C.	0.8193
A.P.I. gravity	41.2
Initial boiling point, °C.	61.0
Per cent over at 210° C.	40.0
Per cent over at 285° C.	60.0
End point, °C.	383
Sulfur, per cent	.05
Residue, 30 per cent:	
Specific gravity at 15.6° C.	0.8922
A.P.I. gravity	27.1
Sulfur, per cent	.09

CRACKING UNIT FOR FUEL-OIL AND GAS-OIL

All the fuel-oil bottoms and part of the gas-oil produced by the topping unit will be the charging stock for the unit. This will be a full flashing Dubbs unit of the latest type, with absorption column to extract gasoline from the gas produced and combined with the treatment of gasoline in the liquid stage and the gasoline stabilizer unit. The capacity of the unit will be 30,780 cubic meters, per year of 325 days of operation, of gasoline refined in the liquid stage and stabilized. This gasoline production shall be obtained with the Ecuador crude oil and the charge to the cracking unit shall be 60,900 cubic meters of fuel plus 1,300 cubic meters of gas oil per 325 working days.

This unit will work independently from the

The topping unit as seen from the road



topping unit and will be arranged with necessary connections to permit, if it should ever become advisable, the addition at some future date of a second heater, pumps and necessary piping, thus effecting a selective type of cracking unit. It will be equipped with a Foster Wheeler still radiation type of approved design with convection section and radiant heat roof and floor tubes. The walls and roof are of Detrick type.

The reaction chamber has walls of 90 mm. thick, of steel construction and insulated for a maximum working temperature of 510° C. with 125 mm. monolithic insulation.

The flash chamber has walls of 12.5 mm. thick, of electric fusion welded construction and insulated for a maximum working temperature of 450° C. with 100 mm. monolithic insulation. A high pressure vertical type Leach heat exchanger approximately 1,065 mm. in diameter, is installed on a suitable steel tower, above the flash chamber. The heat exchanger will be insulated for a maximum working temperature of 450° C. with 100 mm. monolithic insulation.

The fractionating column is approximately 1,520 mm. by 19,800 mm.; lower half of shell 15.5 mm. plate, and upper half 12.5 mm. plate. The column is equipped with 18 cast iron bubble trays with caps and 10 cast iron side-to-side pans. The column will be insulated for a maximum working temperature of 400° C. for the lower half and 260° C. for the upper half. A special building has been erected for the receiver and hot oil pump house with steel roof trusses and pitched roof.

The vapor condenser consists of parallel pipe coils and headers installed in an iron box with suitable baffle plates and inlet and outlet headers.

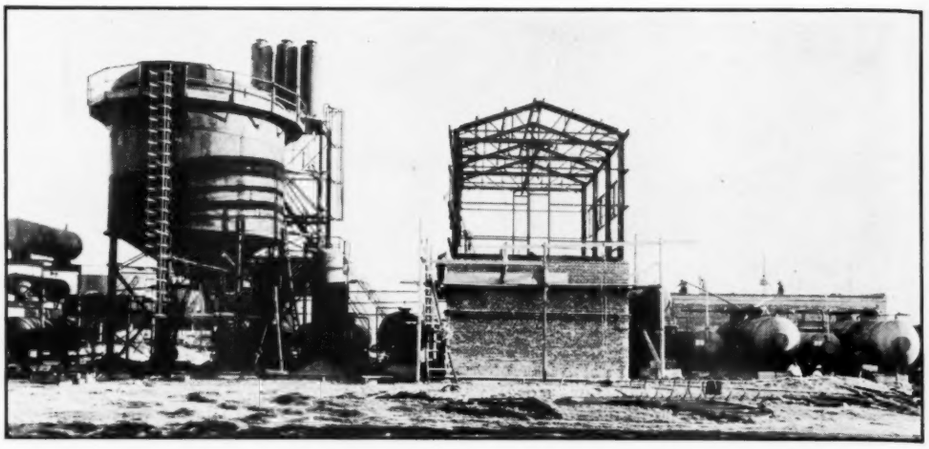
Three cooler coils consisting of pipe and plug type return bends will be provided, one for recycle, one for bottoms and one for residuum. These coils are installed in a common steel box provided with suitable bulk head nozzles.

The receiver tank is approximately 1 m. by 3.50 mts. by 12.5 mm. walls, of electric fusion welded construction; the condensate accumulator of electric fusion welded construction with 100 mm. insulation; and the gas absorption column of electric fusion welded construction, equipped with approximately 16 cast iron bubble trays and caps.

The unit is equipped with the parts necessary for its working and with temperature, pressure and flow controls, regulators and recorders of the liquid level, gas controllers, meters, gaugers. It is also equipped with an electric pyrometer of Leeds and Northrup type, including a registrator and indicator equipment. The chimney is of concrete, 40 meters high.

STABILIZING UNIT FOR CRACKING GASOLINE

This unit is composed of a debutanizing column with bubble trays, bubble caps and downcomers, and will operate in combination with the cracking unit. It is furthermore equipped with a steam heater, with reevaporator, with reflux supply tank, with heat interchanger, with condenser and cooler, control instruments, etc.



Construction view of the chemical plant

The unit for treating cracked gasoline in the liquid stage is composed of two towers or deposits of a capacity to allow for the treating of the amount of gasoline produced by the cracking unit.

The stabilized gasoline which is collected in the bottom part of the reevaporator, with which this unit is equipped, is taken by a pump and forced through towers containing clay; the towers working at a pressure of 18 kilograms per square centimeter. The temperature to be maintained in the towers will oscillate between 210° to 260° or 280° C. The thickness of the walls of the towers is sufficient to maintain the gasoline in a liquid stage at these temperatures.

UNIT FOR THE ALKALINE TREATMENT OF GASOLINE

This unit will have a capacity for treating under normal and continuous operation 300 cubic meters of gasoline, measured at 15° C., per day of 24 hours, this charging product being submitted to the following chemical treatments: (1) Treatment with doctor solution; (2) treatment with caustic soda; (3) treatment with cleansing water.

The unit for the treatment of kerosene has a mixer of 138 cubic meters operating capacity and a full capacity of 250 cubic meters. The complete equipment for the treatment of kerosene by loads in the mixer treating at the rate of one load each 24 hours. It is supported on steel columns adequately protected against fire. Furthermore, it is provided with loading and recirculation pumps, gauge tanks, blow-cases for fresh sulfuric acid, for caustic soda solution, residuum, sludge recanting, etc.

The unit is also complete with a steel frame building, constructed rubble work, of sufficient dimensions to contain the circulating pump and motor, the blow-cases and the gauge tanks for acid and soda. This building has also a small storeroom to contain a stock of caustic soda in drums.

GAS HOLDER AND GAS DISTRIBUTION SYSTEM

This unit will consist of a gasometer of 500 cubic meters capacity, at a water column pressure of 0.6 mt. and a gas washing station with caustic soda and water. It also includes the piping, from the forementioned washing station, which is situated alongside the cracking unit, to the gasometer and from the gasometer to the various points of consumption of low pressure gas, as well as the high pressure gas piping from the cracking unit to the power station. The gas washing plant, situated near the cracking unit, will be composed of a tower for washing the gas, tanks for the supply of soda, gaugers, and pressure indicators.

The steam generating station consists of three boilers, each with normal capacity of 3,300 kilograms of steam of 13.5 kilograms per square centimeter, and 250° C. per hour and maximum of 4,000 kilograms per hour; a water treating station of capacity corresponding to two boilers working normally; an air compressor of 1,000 cubic meters capacity per hour at 7 atmospheres, worked by electric motor, and the complete equipment for the alarm system against fire in the refinery, with 10 alarm boxes.

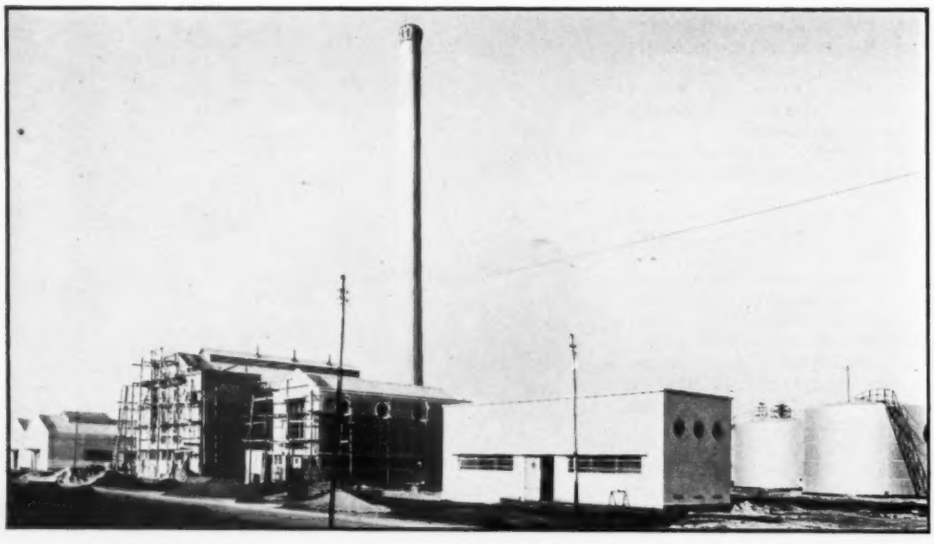
The boilers are from Babcock & Wilcox, of W.I.F. type, each one with 170 square meters heating surface to stand a work pressure of 14 kilograms per square centimeter, complete with support and water supply regulators. Each boiler will be equipped with an integral superheater to increase the heat generated to a final temperature of 250° °C.

ELECTRICAL EQUIPMENT

The A.N.C.A.P. is installing a transformer in a sub-station of 600 KW. situated near the power plant, and inside this last one the main switch for the connection of the external current of 6,000 volts, as well as the switchboard for the distribution line of 200 volts for power and for lighting are being installed.

In order to facilitate the normal functioning of the refinery, buildings have been erected for the workshop and warehouses covering an area of 1,500 square meters approximately, and which have been constructed with concrete framework and rubble walls, and the iron framework roof is covered with non-inflammable asbestos cement.

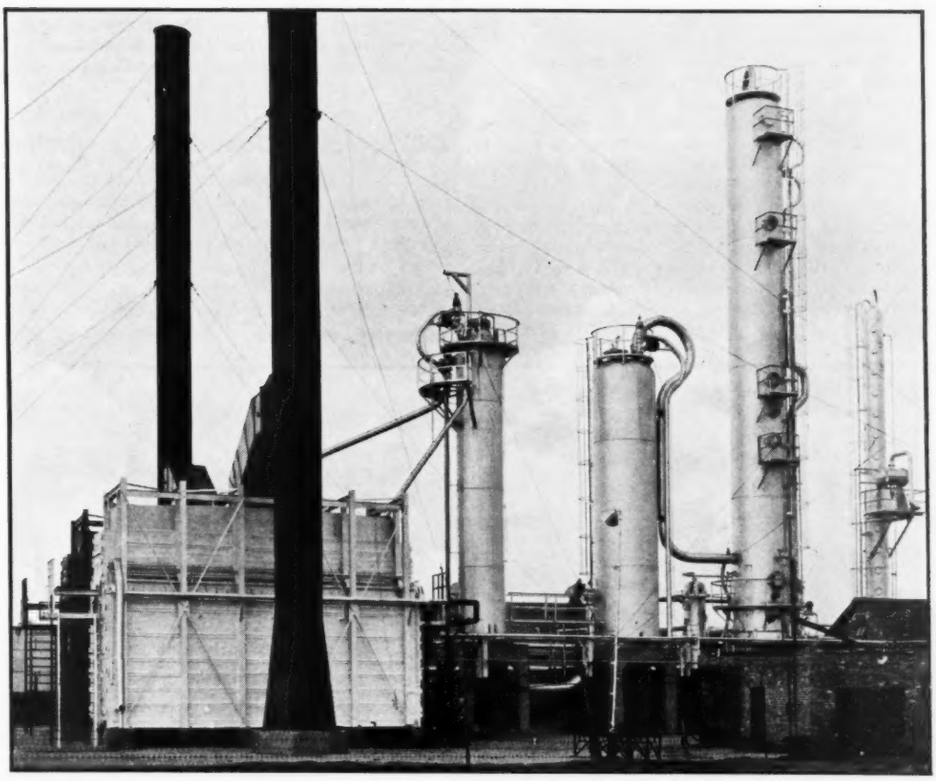
At the head of the mole at La Teja, on Montevideo Bay, a pump house has been constructed containing the pumps for the refrigerating water, this water to be taken directly from the bay. Alternative pumps will be used in cases of emergency by means of a double forcing piping for refrigeration and fire. The fire piping will also be connected with the storage plant and fire station, in order to increase its efficiency.



From left to right, the warehouse and work shop, boiler-house, fire station and electrical station

New Barnsdall Unit Featured by Operation Economy

By W. T. ZIEGENHAIN



General view of Barnsdall Oil Co.'s new 2,500-bbl. Dubbs cracking unit installed in its Wichita, Kans., refinery. To the left are the two up-shot furnaces and to the right in order are the reaction chamber, flash tower, fractionating tower and stabilizer tower

Typifying compactness, simplicity and economy in both physical equipment and in operation, the new 2,500-bbl. Dubbs two-coil, selective cracking unit placed in operation at the Wichita, Kans., refinery of the Barnsdall Oil Co. is producing a yield of 54 per cent 60 octane untreated 396 endpoint gasoline of 9 pounds vapor pressure from 24 gravity topped crude.

The unit has been in operation a little less than one month and minor adjustments are being made so that the actual results summarized above may be considered minimum.

The unit essentially consists of two furnaces, a reaction chamber, flash tower, fractionating tower and combination vapor recovery and stabilizing tower. In general, the operation is conventional, the principal features of this unit being the use of two up-shot furnaces and the use of vapor recovery and stablizing equipment tied directly into the operation of the cracking unit. The result is that maximum flexibility is provided for a minimum of equipment. Only endpoint gasoline, fuel oil and gas leave the unit, the control of the stabilizer determining the vapor pressure of the gasoline produced and also the quantity of gas going to the fuel lines.

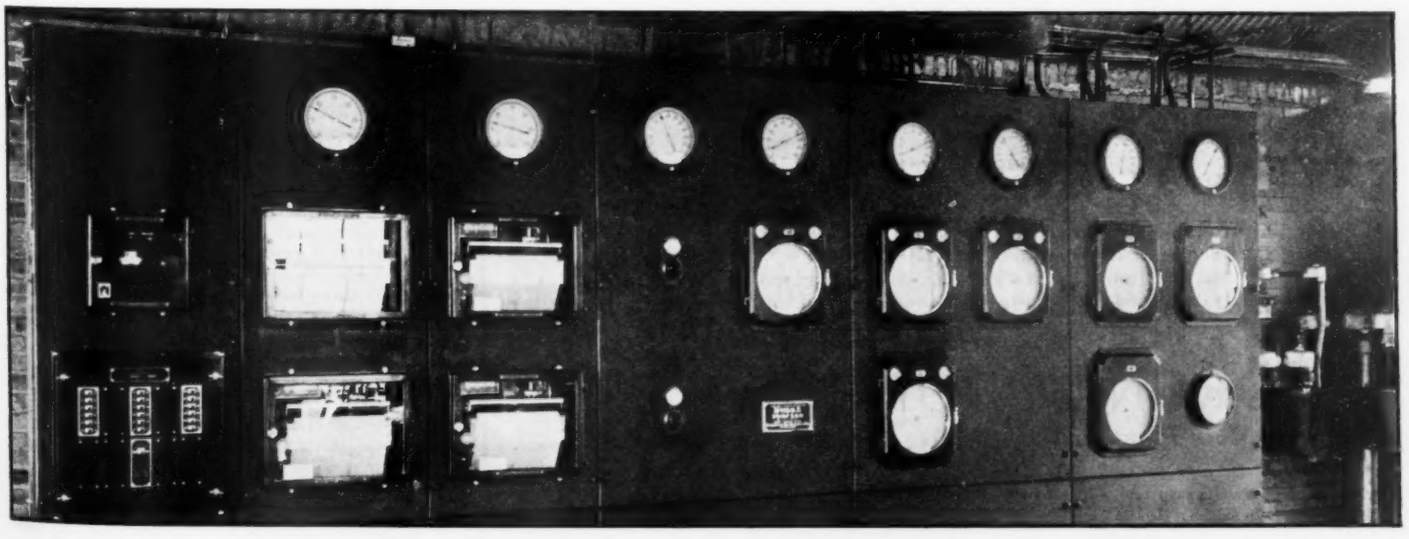
Up to the present time, the stabilizer has been operated to produce a 9-pound gasoline but adjustments are being made throughout the cracking unit so that a 12-pound product will be recovered in preparation for producing late fall and winter motor fuels. As soon as these changes are made the yield of gasoline will be materially increased and, of course, the retention of all or a greater share of the butane in the gasoline will reduce the volume of gas coming from the stabilizer in proportion.

In the normal operation of the unit 24-26 gravity topped, Kansas crude is charged directly into the fractionating column and the unvaporized portion of the charge is continuously withdrawn off the bottom of the fractionator and passes through the heavy oil furnace. The gravity of this oil is about 18.

A side stream of 26-27 gravity gas oil is taken off the tower and run through the other furnace known as the light oil furnace. The streams from the two furnaces merge and enter the reaction chamber. From here, in conventional manner the stream enters the flash chamber, the overhead from this chamber entering the fractionator while the bottoms are removed as a 6-8 gravity fuel. This fuel represents about 38 per cent of the initial raw charge. The overhead from the fractionator goes directly to the stabilizer which operates under the same pressure as the fractionator, the only transfer of other material being the recovery of a naphtha as a side stream off the fractionator which also goes to the combination vapor recovery and stabilizer to act as an absorption media for the lighter fractions undergoing fractionation within the stabilizer. This naphtha loses its identity in the stabilizer, however, and becomes a part of the finished motor fuel leaving the stabilizer.

Although the two furnaces included as a part of this unit differ in detail, they use the principle of up-shot firing, the interior of each furnace being divided lengthwise into two compartments

DEPARTMENT OF GEOGRAPHY THE UNIVERSITY OF NEBRASKA



Instrument and control panel for the new unit, the board being placed in the pump house

by a refractory wall extending two-thirds of the height of the interior. A Dietrich arch completes the upper portion of the masonry. The center bridge wall takes the direct fire of the two rows of burners set in the floor, one on either side of the dividing wall. The flame and gases of combustion flow upward through the breeching and out through the stack.

The oil flow is in the opposite direction. The charge to the heavy oil furnace enters through two parallel coils located in the top of the furnace and continues divided, one-half passing down through the series of the radiant tubes on one side of the furnace and the other half passing down through the tubes in the other side.

The charge to the light oil furnace enters the top of tube bank, passes down through the convection section, and then is led externally to the bottom of the radiant section. The flow is then upward, across and downward, through the radiant tubes, this resulting in an arrangement which permits a continuous progressive heating curve for the whole furnace if so desired. However it may be operated with one side giving a progressive curve and the other side with a flat curve, that is, as a soaking bank.

The new Dubbs unit was built for Barnsdall by the Frick-Reid Supply Corp., and the detailed design of the unit was the work of the Burrell-Mase Engineering Co., in cooperation with the engineers of the Universal Oil Products Co.

Oil Topics at Canadian Convention

EDMONTON, Alberta, Oct. 10.—At the convention of the Canadian Institute of Mining and Metallurgy here last week the program included a number of papers relative to oil and gas.

Dr. G. S. Hume, of the Geological Survey of Canada, reported that in the past two years some 36,000 square miles had been mapped in Saskatchewan and Alberta in a petroleum survey which disclosed anticlines with oil and gas prospects at Battleview, northeast of Wainwright, and in the Eagle Hills near Battleford, Saskatchewan.

Results of investigations into the chemical composition of the oil and gas producing limestones of Turner Valley were given by W. P. Campbell of the federal mines department.

A paper on oil prospects on the west side of Turner Valley was given by J. G. Spratt and V. Taylor; while George Giltinan discussed seismographic survey work and Hans Lundberg dealt with geophysical prospecting.

Research Program Favored by Road Oil Congress

(Continued from Page 35)

lic resistance against its adoption. In some sections this public mental attitude has already set in as a result of some current failures.

"A crying need before the industry of asphalt production and sales in all of its allied ramifications is unquestionable factual advice to purchasers in the highway field. Most particularly is this true with new products. Spurious advice may be divided into two kinds: That which is misleading by reason of ignorance of salesmanship, or ignorance of its own product, and that which is misleading by reason of downright design. The latter is one of the type in which all that is usually attempted is to invent a brisk succession of statements designed to capture the attention by any device whatsoever rather than to conform rigidly to the technical conventions upon which the success of asphaltic construction is constantly dependent. The more mysterious or ignorant a particular surrounding happens to be, the greater become the possibilities of the adoption of this spurious type of salesmanship. Although in the minority there is always waiting this type of salesmanship to hit progress with a knotted club. Experience has shown that this type is always circumvented by a resolute administrative attitude. The annoying thing, however, is that it keeps continuously cropping up with a succession of brisk statements to muddy the stream of years of experiences."

Then, realizing that the highway engineer might be provided with good materials but not have a good foundation on which to use them, R. C. Shappler, geologist for the Missouri State Highway Department, had this to say:

"The demand for a large mileage of low-cost roads designed to meet the finances available for construction, as well as the service requirements of present-day traffic, has naturally brought the 'oil mat' or 'black top' type road into a prominent place. From their nature these bituminous surfaces require or must include in their design the provision of stable bases to insure the success of the surface."

These remarks were supported by other highway engineers and more particularly by Fred G. Allison, chief chemist of the Arkansas State Highway Commission, who said:

"There are many ways of going about the job of planning and placing asphalt road surfaces. Some methods have turned out to be remarkably successful and have stood the test of many years of severe service. Some methods have turned out to be dismal failures, have been very poor investments from almost every point of view. Probably most of the work which has been done to date might have yielded better value per dollar invested if there had been a more thorough understanding of the deep lying scientific principles which control the behavior of such mixtures and their component parts."

Walter E. Hopper, petroleum geologist and engineer for the Securities and Exchange Commission, returned to Washington, D. C., Wednesday of this week after several days in Fort Worth, Tex., and Tulsa on business for the commission. Before taking his post in the S.E.C., Mr. Hopper was an independent producer in Texas, and he has retained his production interests.

Safe and Economical

Our service men will gladly discuss your mud and gas blowout problems without cost or obligation.

OPALITE

A Mud Stabalizer

increase weight without affecting flow

Opalite combines with rotary mud faster than any other admix. Will increase the weight of rotary mud from 8 to 16 pounds, if desired, without affecting the flow of the mud. Opalite has a high safety factor of weight, and places a minimum load on the pumps. It lubricates the bit, holds up the wall, and carries cuttings to the surface (wherein trap gases are quickly released). Opalite will increase drilling efficiency under all conditions.

CORONA PRODUCTS, INC.

Main Plant and Office: Rogers, Arkansas, U.S.A.

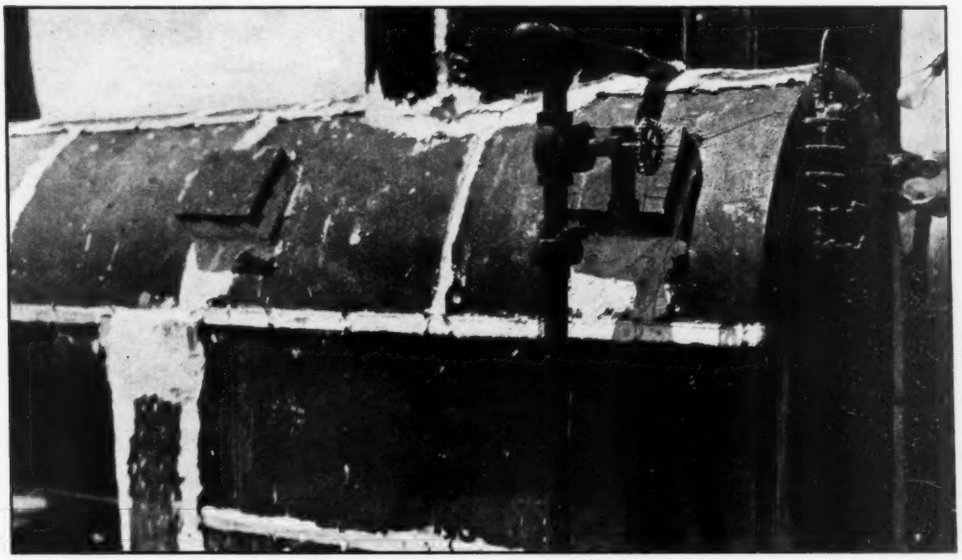
Stocks carried in all active fields: Phone Turner Lumber Co., Houston, Texas; Coastal Supply Co., Houston, Texas; Wm. Cameron & Co., Dayton or Liberty, Texas; J. F. Ellis Lumber Co., Vinton, Louisiana. Stocks in practically all other active fields.

OUR SERVICE MEN WILL BE GLAD TO GIVE YOU ANY ASSISTANCE POSSIBLE

OPERATING IDEAS

Fire Hazard Eliminated

To eliminate the danger of fires caused by sparks from the exhaust igniting any escaping gas, one oil company operating in the Oklahoma City field has placed an extension on the exhaust pipe of its portable pumping units, used in taking potentials, and run the extension into a barrel partially filled with water. This practice eliminates the fire hazard arising from engine backfires. This would also be a safe practice to adopt where the engines are used near a flowing well.

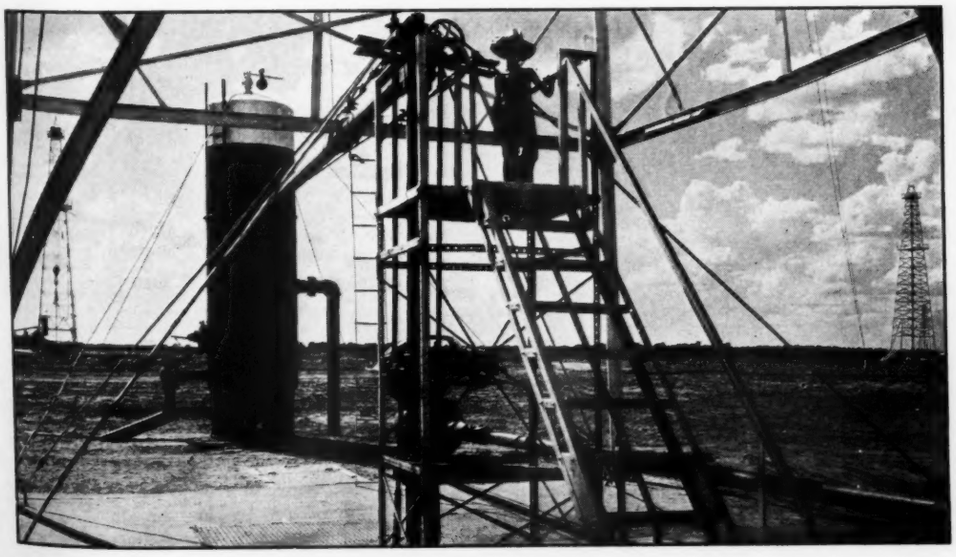


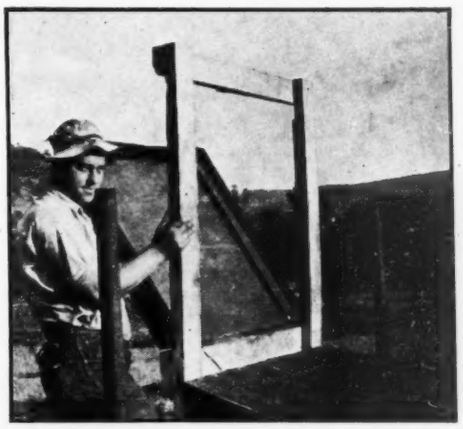
Removable Asbestos Blanket Used on Drilling Boilers

One drilling contractor operating on the Gulf Coast is testing the savings effected on both water and fuel, by insulating his boilers with a 2-inch asbestos blanket. While boiler insulation is not a new practice, as many contractors have used insulation on their boilers in various fields, they have never found a blanket that could be removed without a great loss in both material and labor when the boiler was moved from one location to another. This method appears to be the solution since the blanket is made in 3-foot sections which are fastened together with wire clips. Thus the blanket can be removed in a very few minutes whenever the operator desires to move the boilers. Fire clay is used to cement the sections together.

Flow-Bean Installed on Level With Separator Intake

Instead of sloping the flow-line from the well head to the input connection of the separator, one major oil company has adapted the practice of extending the casing to the level of the separator connection. The flow-bean is installed at the point where the flow-line and casing join, about 10 feet above the derrick floor, and a steel derrick and platform erected so that the well switcher may reach the flow-bean. By using this arrangement the company has found that the flow of the well could be better controlled. The accompanying photograph was taken on one of the new, deep Wilcox-sand wells in the Crescent field, Logan County, Oklahoma.





Semaphores Used in Pumping

In the accompanying photograph, the pumper is seen raising a panel painted red to an upright position where it is fastened to the frame. The devise is mounted on top of a tank battery and is used for the purpose of notifying the operator of the power, located on top of a nearby hill, that the tank has been filled. When the signal is not in use, it is lowered. As shown, the frame is constructed from 2 by 4's and the panel is attached to the frame by hinges. This kind of semaphore is used on a number of properties, now being water-flooded, in the Bradford field, Pa. Their principal advantages are that they save the pumper many steps and lessen the chance of overflowing tanks.

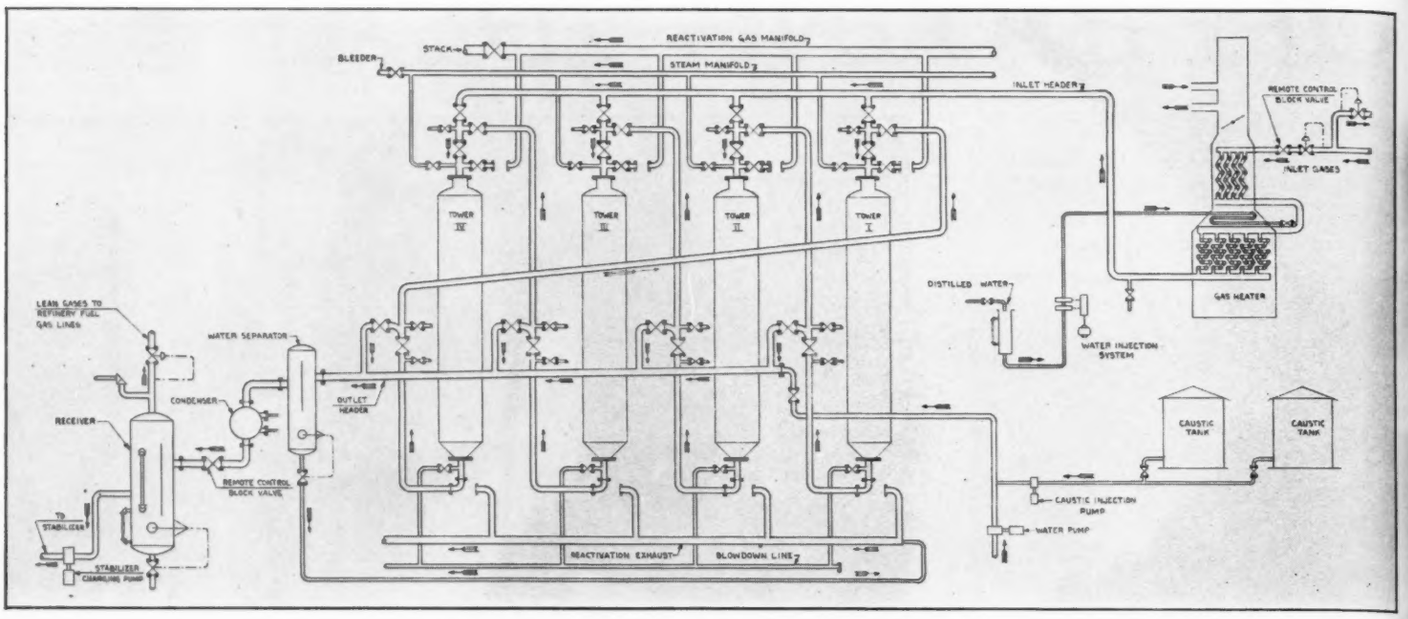


Fig. 1—Simplified flow chart of a catalytic polymerization unit

Motor Fuel From the Catalytic Treatment of Cracked Gases

By GUSTAV EGLOFF
Universal Oil Product Co.

With the automobile and airplane industries producing motors having higher compression ratios and greater speeds than ever before, the oil industry has produced the gasoline making it possible for these motors to function. The octane rating or fuel efficiency of gasoline has been in advance of engine design. The cracking process has contributed to the rising octanes not alone in the production of high antiknock gasoline but also in furnishing cracked gases which can be catalytically converted into as high as 100 octane motor fuels.

Since 1925 the top speed of automobiles has increased from 60 to over 100 miles per hour, while cruising speed of airplanes has developed from 80 to 200 miles per hour, as shown by the 9-hour and 27-minute record-breaking California to New York flight made early this year, using 100 octane gasoline.

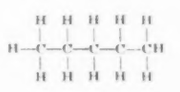
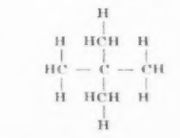
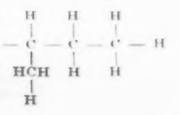
The catalytic polymerization process of the Universal Oil Products Co.[1] is commercially operating. There are operating and under design or construction, units to produce about 430,000 gallons of polymer gasoline per day, or at a yearly rate of 157,000,000 gallons of 80 to 100 octane gasoline.

The new polymer gasolines have greater chemical uniformity than regular gasoline, since one is largely composed of olefin hydrocarbons and the other is made up of isoparaffin compounds, while regular gasoline is made up of paraffins, olefins, naphthenes, and aromatics in widely varying percentages. The oil industry is now in a position to furnish motor fuel with but few hydrocarbons present or even single hydrocarbons such as isooctane, thus making it possible to control the combustion conditions in automotive cylinders to a greater nicety, with greater efficiency in power output and fuel economy.

It is well known that the structure of hydrocarbons profoundly affects the speed of combustion and knocking tendencies. This is clearly brought out in Table 1 which shows the octane ratings of individual hydrocarbons of the paraffin, olefin, cycloparaffin and aromatic series. The effect of hydrocarbon structure on octane rating is clearly shown by the three pentanes which have been studied. Normal pentane has an octane rating of

***W. P. R. A.*—Presented before technical session at Tulsa, Oct. 13, 1936**

64, the 2,2-dimethylpropane an octane rating of 83 and the 2-methylbutane has a value of 90. The structural formulae of the three pentanes and corresponding O.N. ratings are shown as follows:

		Octane number
Normal pentane		64
2,2-Dimethylpropane		83
2-Methylbutane		90

The U.O.P. catalytic polymerization unit consists of a heater, catalyst chamber, condenser, receiver, stabilizer and equipment for reactivating the catalyst in situ. Due to the low temperature (450° F.) and pressure (200 pounds) used, the installation cost is relatively low and a number of plants have been built or are designed based upon using old equipment around the refinery such as pressure vessels, etc.

TABLE 1—OCTANE RATINGS OF HYDROCARBONS (C.F.R. Motor Method)

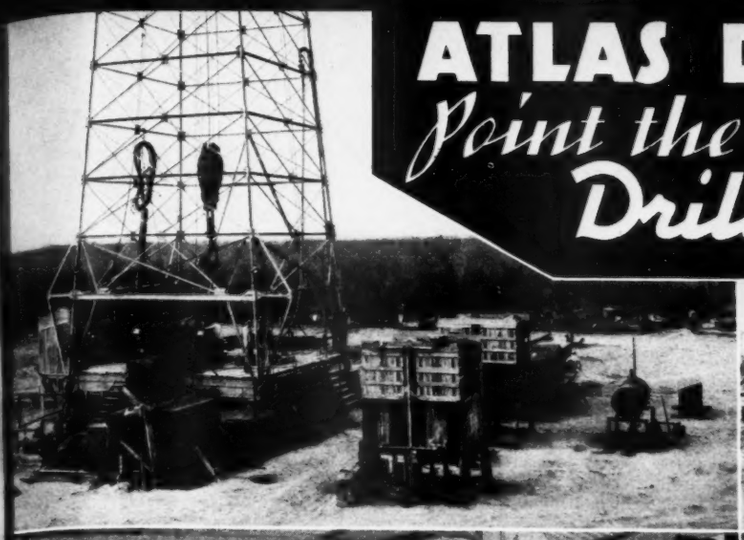
	Hydrocarbon symbol	Octane number
Paraffins:		
Methane	CH_4	*125
Ethane	C_2H_6	*125
Propane	C_3H_8	*125
Butane	C_4H_{10}	91
Isobutane	C_4H_{10}	99
Pentane	C_5H_{12}	64
2,2-Dimethylpropane	C_5H_{12}	83
2-Methylbutane-isopentane	C_5H_{12}	90
Hexane	C_6H_{14}	59
2,3-Dimethylbutane	C_6H_{14}	95
Heptane	C_7H_{16}	0
Octane	C_8H_{18}	—0
Iso-octane-2,2,4-trimethylpentane	C_8H_{18}	100
Nonane	C_9H_{20}	—28
Isodecane	$C_{10}H_{22}$	93
Isododecane	$C_{12}H_{26}$	100
Olefins:		
1-Butane	C_4H_8	80
2-Butene	C_4H_8	83
Isobutene	C_4H_8	87
Di-isobutene (polymer product)	C_8H_{16}	84
Tri-isobutene (polymer product)	$C_{12}H_{24}$	87
Di-isoamylene (polymer product)	$C_{10}H_{20}$	75
Cycloparaffins:		
Methylcyclopentane	C_6H_{12}	82
Cyclohexane	C_6H_{12}	77
Aromatics:		
Benzol	C_6H_6	97
Toluol	C_7H_8	+100

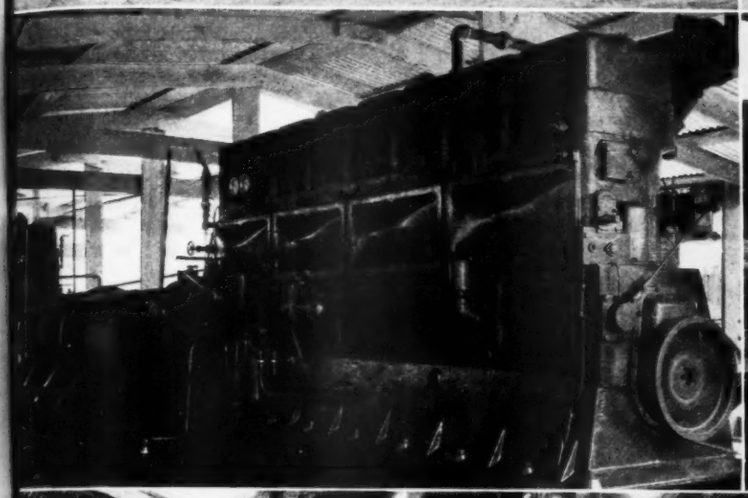
*Estimated.

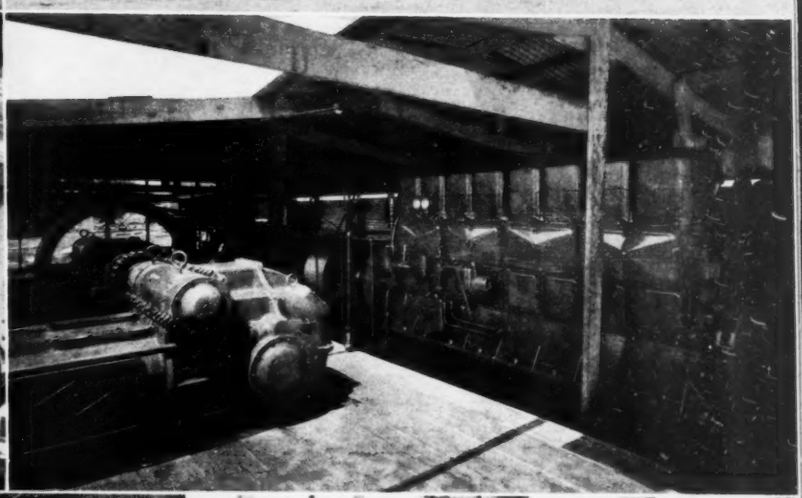
The flow charts (Figures 1 and 2) and photograph illustrate commercial catalytic polymerization units.

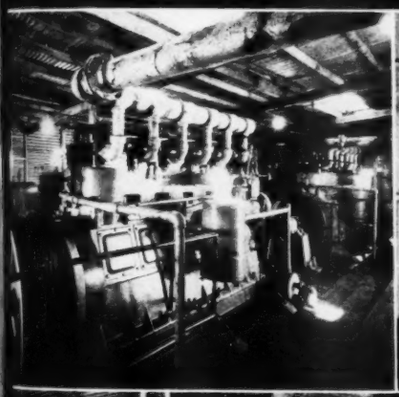
The olefin-containing gases are heated to a temperature of about 450° F. and under pressures of the order of 200 pounds, in a furnace from which they flow over the solid phosphoric acid

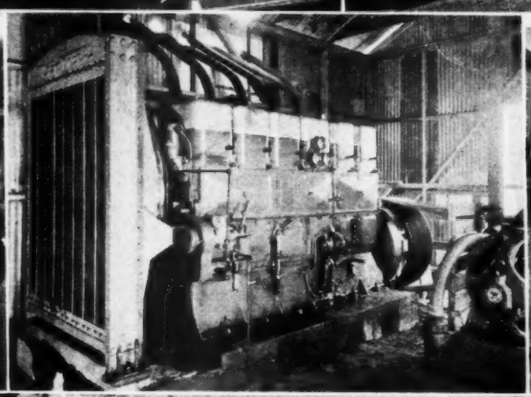
ATLAS DIESELS
Point the Trend in Drilling

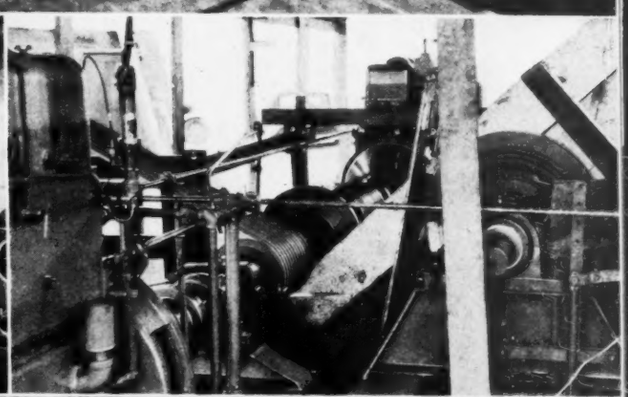


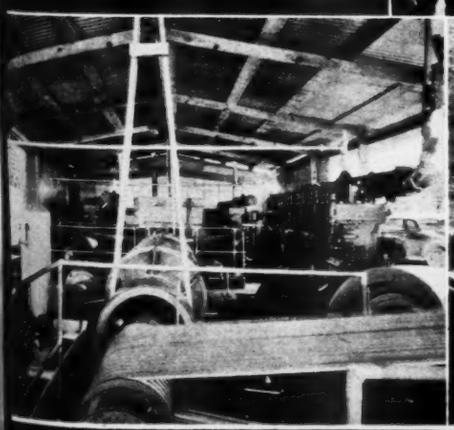


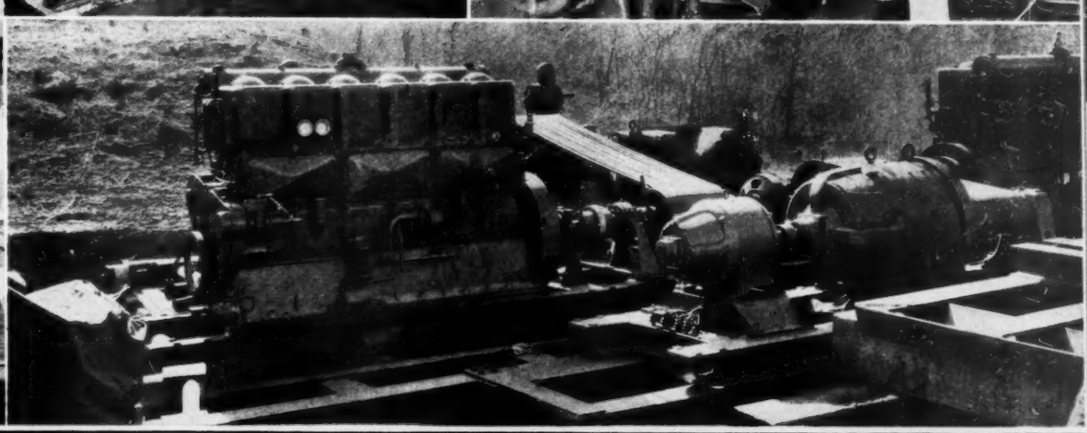












SEND FOR A COPY OF OUR BULLETIN "ATLAS IMPERIAL DIESELS FOR ALL OIL FIELD SERVICE"

ATLAS IMPERIAL DIESEL ENGINE CO.

OAKLAND, CALIFORNIA · · MATTOON, ILLINOIS

Oil Country Distributors

K. S. RICHARDS
143 N. ROCK ISLAND, WICHITA

FACTORY BRANCH
201 FISH HARBOR WHARF, TERMINAL ISLAND, CALIF.

SOUTHERN ENGINE AND PUMP CO.
HOUSTON

ATLAS IMPERIAL

catalyst" through the catalyst chambers. The flow through the chambers is in series. A combination of the olefins present in the gases takes place. The time, temperature and pressure are so controlled that the products of the catalytic reaction boil within the gasoline range. A small quantity of steam is continuously added to the gases passing through the process which serves to prevent dehydration of the catalyst under the operating conditions. The heat liberated by the polymerization reaction increases the temperature in the catalyst chamber to about 550° F.

The products of the reaction are passed through a condensing coil and the polymer gasoline is drawn from the bottom of the receiver while the lean deolefinized gas flows from the top of the receiver to mix with refinery fuel gas. The polymer gasoline is pumped to a stabilizer which is so controlled as to produce the vapor pressure product desired. The so-called rich gas from the top of the stabilizer may be further processed by either cracking or dehydrogenation to produce high olefinic gases for reprocessing in the catalytic polymerization process.

After continued operation, the catalyst gradually loses its activity which is caused primarily by a deposit of carbonaceous material. To reactivate the catalyst to its original state, the carbonaceous material is removed by oxidation to water and carbon dioxide. The temperature of the oxidation is controlled by passing a stream of combustion gases containing limited percentages of oxygen over the catalyst; the maximum temperature generated in the catalyst bed does not exceed 950° F. The combustion gases entering the catalyst bed are held at a temperature of about 600° F. which is the approximate ignition temperature for the carbonaceous material and oxygen. It is desirable to limit the amount of water vapor in the combustion gases to about 3 per cent by volume.

After the oxidation or burning of the carbonaceous material has been completed, it is necessary to hydrate the catalyst to the proper degree so as to produce the highest activity. This is accomplished by maintaining the catalyst in an atmosphere of steam for 10 to 16 hours at approximately 500° F.

To analyze gases from the cracking process is a relatively complex operation when it is desired to obtain reasonably close results on the individual components present. A quick determination of the total percentage of propene, isobutene, 1-butene and 2-butene present in cracked gases may be made by first passing the gas through a potassium hydroxide gas pipette to remove hydrogen sulfide and carbon dioxide and then through an 87 per cent sulfuric acid pipette. The absorption in the latter pipette gives the yield in per cent of the four olefins. When the isobutene percentage is desired the steps are potassium hydroxide solution as before followed first by absorption in a 64 per cent solution of sulfuric acid which polymerizes the isobutene, after which an 87 per cent sulfuric acid solution may be used for the determination of the mixture of propene, 1-butene and 2-butene.

Before the design of a catalytic polymerization unit is made, analysis for each component present in the cracked gas is made by a combination of low temperature Podbielniak[2] and Gockel apparatus[3].

The hydrocarbon gases to be processed catalytically may vary widely in propene and butene percentages. Typical analyses are shown in Table 2

TABLE 2—TYPICAL GAS ANALYSES

	Stabilizer gas, per cent			Deeply stabilized gas, per cent	Receiver gas, per cent
Noncondensibles	5.5	4.0	8.6	0.4	26.5
Ethylene	2.9	16.0	2.6	0.6	6.0
Ethane	13.4	17.8	10.4	4.4	17.3
Propene	15.3	29.0	14.0	9.3	11.2
Propane	39.4	22.2	34.4	21.8	26.8
Isobutene	3.8	2.6	4.3	9.5	1.2
n-Butenes	5.9	6.2	6.0	17.6	2.8
Butanes	12.9	2.0	18.2	36.4	5.6
Pentanes and higher	0.9	0.2	1.6	...	0.2
Propene and butenes	25.0	37.8	24.3	36.4	15.2

Hydrocarbon gases containing olefins such as propene and butenes are derived from the cracking process, the cracking of propane and butane, or their catalytic dehydrogenation into the corresponding propene and butenes.

YIELDS OF POLYMER GASOLINE

The possible yield of polymer gasoline per 1,000 cubic feet of olefin containing gas is a function of the percentage of propene and butene and their ratio. The higher the percentage present, the greater the yield of polymer gasoline. Also the yield of polymer gasoline is larger if more butene than propene is present in the gas.

A number of commercial cracked gases were analyzed for their propene-butenes percentage. The yields of polymer gasoline of 10 pounds Reid vapor pressure derivable per 1,000 cubic feet of gas are shown in Table 3.

TABLE 3—YIELDS OF POLYMER GASOLINE

Propene and butenes % in cracked gas	Polymer gasoline, gals. per 1,000 cu. ft. cracked gas
14.1	2.4
17.8	3.0
18.0	3.1
18.9	3.7
21.3	4.2
24.1	4.9
27.1	5.3
27.5	5.8
33.3	7.0
34.3	7.3
41.0	9.2

TABLE 4—OPERATING CONDITIONS

Catalytic polymer unit cracked gas million cu. ft. per day	Per cent propene-butenes in the cracked gas	Polymer gasoline gallons per 1,000 cu. ft.	Polymer gasoline 10-lb. Reid vapor pressure, gals. per day
0.6	27.1	5.3	3,180
0.7	33.5	7.1	5,040
1.1	17.7	3.0	3,300
1.8	14.1	2.4	4,320
2.0	24.1	4.9	9,500
3.1	18.0	3.1	9,800
4.2	41.0	9.2	39,000
5.0	17.9	3.0	15,000
6.0	27.5	5.8	34,800
6.7	34.6	7.3	49,200
7.8	21.0	4.2	33,000
8.7	18.9	3.7	32,375
12.5	34.0	7.3	91,200
15.0	33.2	6.8	102,000
27.0	21.6	4.2	113,500
102.2			545,215

CATALYTIC POLYMERIZATION UNITS

A number of Universal Oil Products catalytic polymerization units are in commercial operation, under design or course of construction or projected, which range in daily capacity from 600,000 to 27,000,000 cubic feet of cracked gas, with a propene-butene content of from 14 to 41 per cent.

The data covering these units is shown in Table 4, relating to cubic feet of cracked gas per day, the percentage of propene and butenes present, the gallons of polymer gasoline per 1,000 cu-

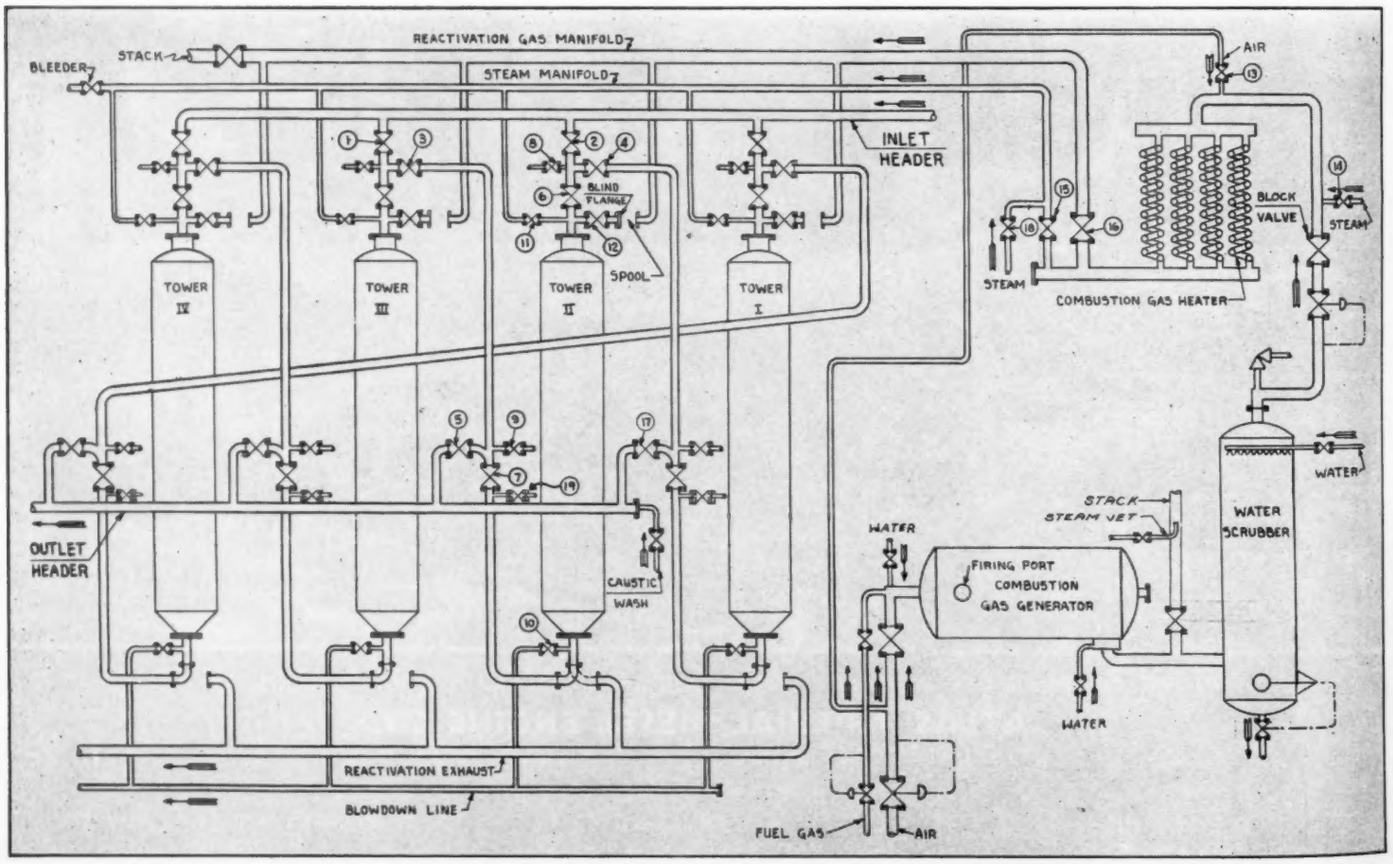


Fig. 2 — Diagram of the catalytic polymerization unit including the catalyst regenerating procedure

bic feet of gas, and the total polymer gasoline per unit per day.

Polymer gasoline has but relatively few hydrocarbons present, which are made up predominantly of olefins. An interesting study of this gasoline was made by Tongberg, Nickels, Lavorski and Fenske of Pennsylvania State College who reported before the Petroleum Section of the American Chemical Society meeting at Pittsburgh, September 7, 1936, that "the distillations were run in a 0.95-inch I.D., 39-foot tall column having approximately 100 theoretical plates under total reflux with a mixture of n-heptane and methylcyclohexane. The charge in each distillation was 10 liters and the average reflux ratio was 40 to 1. Each fraction of distillate corresponded to 0.6 to 1.5 per cent by volume of the charge."

Two very narrow boiling fractions were obtained in the fractionation of polymer gasoline as shown in Table 5.

Included in the second fraction were three small fractions comprising 3.1 per cent of the charge, having a boiling point of 97.7-97.8, a constant refractive index of 1.4140, a constant bromine number of 192, and varying in A.P.I. gravity by 0.3. No pure hydrocarbon for which information is available has properties approaching the above.

Hydrocarbons[4] boiling similarly to the 94.8-95.6° C. fraction are shown in Table 6.

"Three facts in the polymer gasoline fractionation are outstanding, first that 48.1 per cent of the original gasoline could be classified as having seven carbon atoms, second that bromine numbers were too high for mono-olefins, and third that the refractive index curve gave no pronounced peaks and valleys. This last fact indicates that the same type structure predominates and that the aromatic, cyclic olefin, and diolefin content is low. The high bromine numbers are probably due to substitution and not to diolefins. In view of the results, the presence of branched, reactive olefins would be expected."

The percentage distribution of the number of carbon atoms in the hydrocarbon molecules of the fractions in the gasoline are shown in Table 7.

TABLE 5—FRACTIONS RECOVERED

Vol. % of charge	Boiling range	Refractive index range	Bromine No. range	A.P.I. gravity range
9.3	94.8-95.6	1.4109-1.4112	177-182	65.7-66.6
6.9	97.0-97.8	1.4140-1.4152	188-195	64.1-64.5

TABLE 6—SIMILAR HYDROCARBONS

	B.P. °C.	d_4^{20}	n_D^{20}
Heptene-1	94.9	0.6993	1.3999
Heptene-3	95.9	0.7043	1.4090
3-Ethylpentene-2	94.9	0.7172	1.4120

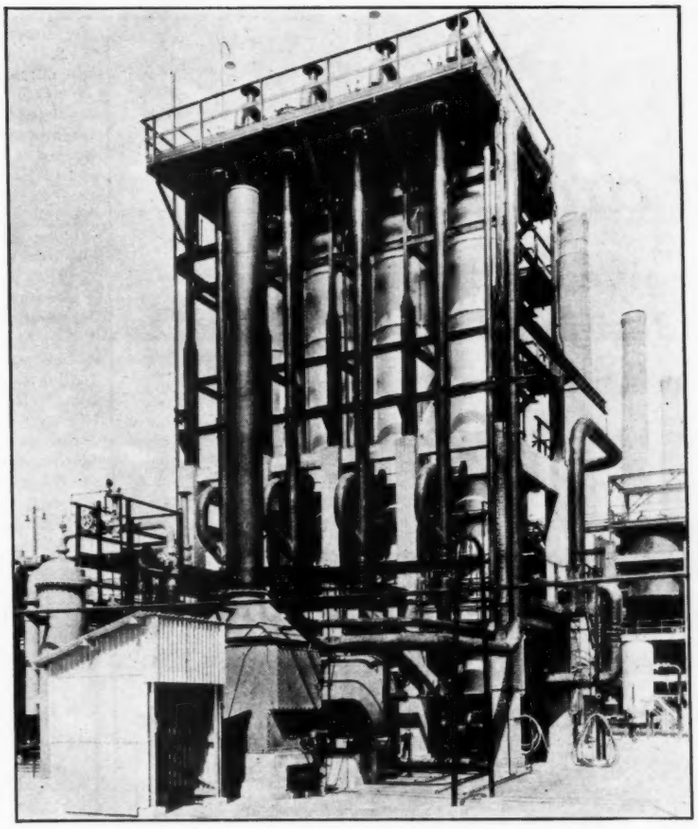
TABLE 7—DISTRIBUTION OF CARBON ATOMS

No. of carbon atoms	Polymer gasoline volume per cent
3-4	0.0
5	1.7
6	5.6
7	48.1
8	15.2
9	0.0
10	0.0
11	0.0
11 and higher	*12.3
Loss	†17.1

*Actually this volume contains some hydrocarbons of smaller number of carbon atoms that drained back into the still.

†A sudden leak developed near the still when the distillate temperature reached 125.5° C. This accounts for the major part of the loss.

Polymer gasoline is particularly outstanding in its octane rating and blending value. The product coming from the catalytic polymerizing unit boils within the gasoline range. Depending upon the hydrogen sulfide present in the cracked gas the percentage of sulfur in the polymer product may be low or high. The hydrogen sulfide may be removed from the cracked gas by one of a number of commercial processes. Hydrogen sulfide reacts with the olefins present in the cracked gas producing mercaptans, which can be almost entirely removed by strong caustic soda.



Catalytic gas polymerization unit of 8,000,000 feet capacity

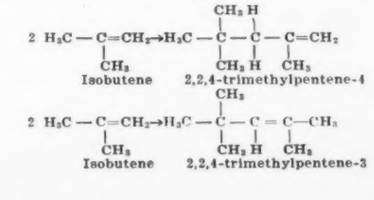
A stabilized cracked gas containing 0.8 per cent hydrogen sulfide yielded a polymer gasoline containing 0.63 per cent sulfur whereas after scrubbing the gas with caustic soda the polymer gasoline contained 0.02 per cent sulfur. The data of the polymer products are shown in Table 8.

TABLE 8—POLYMER GASOLINE (AS PRODUCED)

	Unscrubbed gas		Hydrogen sulfide removed
A.P.I. gravity	69.5	66.5	67.2
Gum (Atlantic Ref. Co. method, copper dish (mg.)	23	36	51
Sulfur, total per cent	0.63	0.31	0.02
Mercaptan Sulfur, per cent	0.48	....	0.00
Octane number (C.F.R. method)	82	79	82
Oxidation bomb induction period, min.	90	....	45
Reid vapor pressure at 100° F., pounds	12.8	....	10.6
100 cc. A.S.T.M. Distillation			
Initial B.P. °F.	89		94
Per cent distilled over			
10	140		158
20	169		186
30	192		199
40	204		207
50	214		215
60	227		224
70	245		241
80	289		277
90	355		333
End point	415		415

The blending value of polymer gasoline varies as a function of the gasoline to which it is added. When starting with a 44-octane gasoline, the rating of octane is raised to 50 using a 20 per cent polymer gasoline concentration, whereas when the starting gasoline was of 70-octane rating, it was raised to 74 when using the same concentration as shown in Table 9.

The production of 95-100-octane fuel can be brought about through the catalytic polymerization of the isobutene present in cracked gases. A mixture of 2,2,4-trimethylpentene-3 and 2,2,4- trimethylpentene-4 is technically known as "di-isobutene."



The octane rating of "di-isobutene" by the C.F.R. Motor Method is 84, but on a blending value basis in Reference Fuel A-3 of octane rating 44, the octane rating ranges from 153 to 95 in concentrations from 5 to 75 per cent.

Upon mild hydrogenation the two trimethylpentenes comprising di-isobutene form the same iso-octane, 2,2,4-trimethylpentane.

2,2,4-trimethylpentane

of 95-100 octane number. The properties of the fuel are 71 A.P.I. gravity and a boiling range of 206-244° F. The maximum concentrations of the butenes in cracked gases are those derived from the liquid condensate in the stabilizer composed of butanes and butenes. The percentage composition varies widely, dependent upon the stock which is cracked, as shown in Table 10.

The iso-octane producted from the hydrogenation of di-isobutene is readily blended with isopentane[5]. It is stated that "isopentane can be added in considerable proportions in the manufacture of high octane number aviation gasolines. It has the effect of greatly augmenting the supply of such gasolines relative to the supply of iso-octane. Isopentane imparts desirable volatility to the iso-octane blends. From the antiknock viewpoint, isopentane has a value ranging from 92 to 100 per cent of that of iso-octane in making 100-octane number aviation gasoline."

Over a billion gallons of 95-100 octane motor fuel can be produced yearly in the United States from the present hydrocarbon gases available, and this volume can be increased markedly whenever the economic demand is present.

TABLE 9—VARIABLE BLENDING VALUE

% 81-octane polymer gasoline added	44-octane straight-run gasoline	70-octane regular gasoline
	Octane ratings of blends	
5	48	72
10	52	73
15	56	74
20	59	74

TABLE 10—BUTENES AND BUTANES FOR STABILIZERS
(Per cent by volume)

Number—	1	2	3
Isobutene	8.9	11.5	12.4
n-Butenes	19.3	36.1	28.7
Butanes	68.4	52.4	58.9

Another eight billion gallons of polymer gasoline are potentially available from gases dissolved in crude oil, from cracked gases, and the propane-butanes supply of natural gas.

[1] Ipatieff, Corson and Egloff: Ind. Eng. Chem., 27, 1,077 (1935); Ipatieff and Egloff, paper presented before the American Petroleum Institute meeting, Tulsa, Okla., May 1935; Nat. Pet. News, 27, No. 20, 24g, May 15, 1935; Oil and Gas Journal, 33, No. 52, 31, May 16, 1935.

[2] Ind. Eng. Chem., Anal. Ed., 5, 119 (1933).

[3] Modified by Universal Oil Products Co.

[4] Sodey and Boord: J. Am. Chem. Soc., 55, 3,293 (1933).

[5] Neptune, Trimble and Alden, The Oil and Gas Journal, p. 26, April 23, 1936.

Companies to Cooperate in School

Another step in specialized training for engineers in the oil and gas industry was marked by the inauguration of a four-year course in natural gas engineering at the Texas College of Arts and Industries, Kingsville. The idea of such a course was conceived two years ago by state educators and interested members of the gas industry. Due to its proximity to the large gas fields of Southwest Texas, second in size to the Panhandle, the Kingsville college was chosen as the seat of the school.

Dr. F. V. L. Patten, formerly with Humble Oil & Refining Co. and Texas Railroad Commission, was chosen to head the new unit. He is supported by an advisory committee of nine comprising executives of the large companies produc-

Now and later

When you give a refinery job to Parsons he designs and builds it to meet the realities of today—but with an eye to your possibilities for tomorrow, too.

Every Parsons refinery layout, every Parsons-built refining unit is planned to allow for increasing capacity or installing other units at lowest cost and with the least disturbance to operations.

The cost of a Parsons job is always economical—including his foresight for your future.

Right now Parsons is busy doubling the capacity of two refineries he built. Their growing market demands it and their extra earnings are paying for it.

How about your refinery?

Ask Parsons.

PARSONS

THE RALPH M. PARSONS CO.

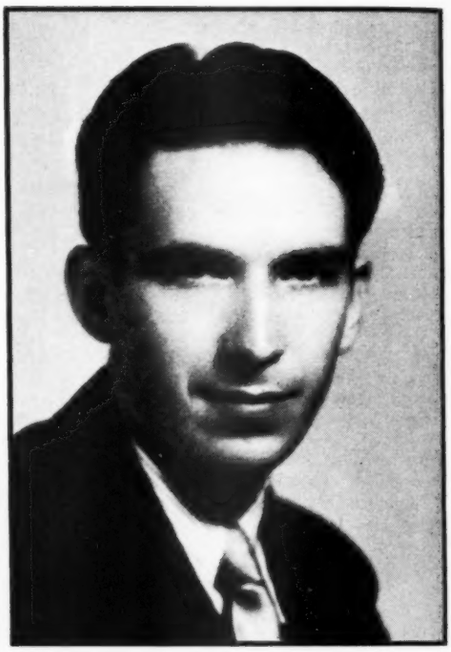
310 SOUTH MICHIGAN AVENUE
CHICAGO

4800 SANTA FE AVENUE, LOS ANGELES

ing, transporting and distributing gas in the state. This committee is concerned with the shaping of the curriculum, equipping the laboratory, and offering employment to undergraduates.

In order to combine theoretical with practical training the natural gas industry in Texas has agreed to furnish summer employment to students in the new school. A minimum of six months of practical experience is requisite for the degree. At the close of each summer's employment the student will be required to make a full report on the work done. On the basis of this report diversification will be practiced in the student's undergraduate employment from year to year to insure his well-rounded experience. Due to the specialization of training and the anticipated absorption of the trained men into the industry, graduation from this school will be limited to a small number for the time being. About 20 men will be awarded degrees each year under the present plans. Students from Texas and other states having suitable qualifications will be admitted.

When the 35 students now enrolled in the school have completed prerequisites for laboratory and advanced courses they will have use of a well



DR. F. V. L. PATTEN

equipped laboratory now under construction. This building will house classrooms and gas measurement, testing and other laboratory equipment of the latest design. Some research work will be under way by winter, according to Doctor Patten, but the major program of such nature will develop with advanced courses and graduate work.

Basic training for the new degree will coincide with that for the other engineering schools at the college. In addition to the fundamental study of mathematics, chemistry, physics, geology and civil, mechanical and electrical engineering, 31 semester hours will be offered in gas engineering. The curriculum at present includes the following courses: Natural gas geology, natural gas production, natural gas measurement, natural gas transmission, natural gas distribution, natural gas uses, oil and gas laws and chemistry of fuels.

These theoretical studies will be augmented by laboratory work where applicable. Supervised field trips will be taken to the nearby gas fields to study drilling and production, and transmission, distribution and consumption phases of the industry will be studied first hand.

The school will place particular emphasis on the transportation, distribution and utilization of natural gas, rather than on the production and exploration phases so well covered in other institutions. This will tend to prevent duplication of training offered elsewhere, and will equip the graduate to specialize in the branches of the gas industry itself.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph.D., Technical Editor

Explosive Range of Hexane or Natural Gasoline in Air

Can you give me any information as to the per cent of hexane or heptane gas that would have to be present in air to be explosive when exposed to the flame of a match? How much natural gasoline would have to be present to make the air explosive?—V. S.

The quantity, usually expressed in per cent by volume, of the hydrocarbons, and the vapors from petroleum, that form an explosive mixture with air is low. The average gasoline and crude oil vapors will produce explosive mixtures when present to the extent of from 1 to 6 per cent in an air mixture. These extremes are called the lower and upper limits. The individual hydrocarbons are considered to require smaller quantities as the molecular weight increases, but this is limited by the volatility or boiling point of the compound.

All liquids change to vapor when exposed, the quantity of vapor, however, being very small when the temperature is below the boiling point. This fact explains why ice evaporates when the temperature is below the freezing point of water. When the temperature is raised above normal atmospheric the rate of change to vapor, and the volume of vapor, increases. For each substance there is a temperature below which it will not pass into vapor fast enough to form a sufficient quantity to produce an explosive mixture.

Natural gas has an explosive range, under normal conditions of temperature and pressure, of from 5 per cent for the lower and 15 per cent for the upper limit. Pure methane, the predominating constituent of natural gas, ranges from 5.6 per cent to 14.8 per cent. When the molecular weight is increased to include hexane, boiling point 156° F. the volatility is comparatively high, with a small quantity of vapor formed at ordinary temperatures; the explosive mixture range being only 1.1 to 4.2 per cent. Heptane, having a boiling point of 209° F. is not considered to form enough vapor under normal conditions to produce an explosive mixture with air.

Natural gasoline varies in composition but the range of 1 to 6 per cent will probably cover the volume of vapor that may be formed from it to make an explosive mixture with air.

References: Burrell & Siebert, U. S. Bureau of Mines Technical Paper No. 39. Burrell & Robertson, Ind. Eng. Chm., 7, 426, 1915. The Oil and Gas Journal, May 2, 1935, page 115.

Alcohol in Motor Fuel in England and Germany

Could you tell me how much alcohol is used in England and Germany for motor fuel? Either the total volume or per cent of the motor fuel will serve my needs. —E. A.

The latest figures that are available relative to the consumption of alcohol in Great Britain for motor fuel, cover the first six months of this year. The total for the United Kingdom was 1,222,550 proof gallons, as compared with 708,294 gallons for the same period in 1935.

Conversion of the above data into Imperial gallons gives a figure of 698,076 gallons utilized over the six months this year. On the assumption that blends of power alcohol motor fuel now on the market contain on the average 12 to 15 per cent of anhydrous alcohol, this means that between 4,654,000 gallons and 5,817,000 gallons of fuel were sold on the British market. However, these blends normally contain also about 10 per cent of benzol.

Recent German regulations stipulate that motor benzol shall contain 10 per cent by weight of methyl alcohol (methanol). Ethyl alcohol is thus replaced. A new regulation, effective October 1, prohibits the sale of motor gasoline that contains no alcohol.

The quantity of ethyl alcohol supplied in Germany as motor fuel by the Federal Alcohol Monopoly in the first six months of 1936 was 1,026,000 hectoliters, compared with 1,035,000 hectoliters in the corresponding period of 1935. During the first half of this year, however, 122,000 hectoliters of methanol were disposed of in addition, so that the total quantity of ethyl and methyl alcohol sold as motor fuel was 1,148,000 hectoliters. From January, 1936, inclusive, May, the 10 per cent alcohol quota contained nine parts of ethyl alcohol and one part of methanol, and from June 1 the proportion has been eight parts of alcohol and two parts methanol.

Note.—Hectoliter = 26.4 U. S. gallons.

SPECIFICATIONS

FUEL OIL FOR DIESEL ENGINES

There are no standard specifications for engine fuel oils. Hubner and Murphy made a survey of the manufacturers of oil engines from 37 of which various specifications were received. The specifications following represent the minimum and maximum of these.

DIESEL ENGINE FUEL

	Min.	Max.
Viscosity, S.W. at 100° F.	30	210
Gravity, A.P.I.	14	45
Sulfur, per cent	0.2	2.0
Hard asphalt	0.05	1.0
Conradson carbon	none	10.0
Ash	trace	0.5
Water and sediment	none	4.0
Flash, °F.	135	195
Pour, °F. max.	(*)	50
B.t.u./lb.	18,500	19,450
Distillation:		
At 10 per cent off, °F., max.	450	510
At 90 per cent off, °F., max.	580	700
Endpoint	650	700
Ignition quality, cetene number	38	52

*10/15° below operating temperature.

Most of these engines are not sensitive to fuel qualities. Many of them, as made by different companies, have satisfactorily operated with all grades of fuel from kerosene to heavy oil.

"From the majority of responses, the most important fuel qualities were found to be ignition quality, cleanliness and viscosity. This applies to the high, medium, and low-speed engines and to the four classifications of combustion chamber design. Some manufacturers attached primary importance to other properties. Flashpoint, distillation, hard asphalt, and sulfur were named, and as of lesser importance, corrosive action, gravity, combustion residue, ash, and Conradson carbon."

Reference: Hubner and Murphy, Universal Oil Products Co. Booklet No. 168, 1935.

Thermoviscosity Not Always the Same for Identical Gravities

Can you give me any information indicating whether or not there is a relation between gravity and thermoviscosity for kerosene of the same grade?—A. W. R.

Kerosene is graded by the trade on a range in gravity of two degrees A.P.I.; as 40-42, 41-43, 42-44, etc., the highest gravity specified for the product being about 47 A.P.I. The difference of thermoviscosities for the extremes is always quite marked, but cannot be depended upon as a fixed characteristic within ±2° A.P.I. gravity.

My personal records reveal, for example, one sample of kerosene having a gravity of 40.2 with thermoviscosity 448, as compared to another specimen of the same gravity showing 394 thermoviscosity. Other samples were 40.5 gravity with 450 viscosity and 40.1 gravity with 484 viscosity. A sample of 43.5 gravity tested 346 thermoviscosity.

It is generally recognized that the upward flow of kerosene in a wick is dependent upon the viscosity. Stepanow advanced the equation:

$$Q = A \times \frac{\alpha 2}{z}$$

in which Q is the quantity of oil raised to a certain height in the wick in a unit of time, α the capillary constant of the oil,, z its viscosity, and A a rather complex factor. This factor comprises within itself the specific gravity of the oil, but this plays so small a part that for any given wick and given height of ascension of the oil A may be regarded as constant without any great error. It is seen in the first place, contrary to the somewhat widespread opinion, that the specific gravity of an illuminating oil has very little effect on its rapidity of ascension in the wick. Only when several illuminating oils of the same origin are compared can it be said that the heavier the oil the slower is its ascension in the wick, and this only on the ground that specific gravity and viscosity run parallel in the various fractions of one and the same petroleum oil.

Reference: Gurwitsch-Moore, Petroleum Technology, page 516.

Sodium Hypochlorite Solution for Treating Natural Gasoline

Concerning the use of the sodium hypochlorite process for oxidizing mercaptans in natural gasoline, we would like to know what concentration of caustic solution should be chlorinated and something of the details of preparing the solution?—R. L. G.

Sodium hypochlorite solution may be prepared by passing chlorine into caustic soda solution containing about 10 per cent NaOH or 15° Be., in a cast iron kettle, cooled with coils or jacketed with cold water. The solution is agitated and maintained at 100° F. while adding the chlorine. The chlorine is passed in until the free alkali is 4 gm. per liter. Stop the flow while the test is being made; overchlorination should be avoided. Approximately 300 gallons of this solution may be prepared from 280 pounds caustic soda, 300 gallons of water and 230 pounds chlorine. This should be diluted to 1,800 gallons with water. This produces a 0.34 N solution, the proper alkalinity for the working solution.

The method for applying the process may vary in details, one scheme is as follows:

Initial water wash followed by a caustic wash 10-12° Be. and then a water wash. Next the first hypochlorite wash, then the second hypochlorite wash, followed by another caustic wash and finally a water wash.

PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Stratigraphic Traps as Compared With Structural Reservoirs

Can a stratigraphic type oil field be located by a geophysical survey or must it be worked out by general applied geology?—H. G. K.

The stratigraphic type oil reservoir is hard to locate by the use of geophysical methods because geophysics are tools used by the geologist to determine relative positions of underground formations. Geophysical surveys do not reveal oil or gas bearing formations, they merely show where changes have taken place in the stratas which may contain gas or oil and these changes in structure indicate where the gas and oil should be accumulated if any is present.

A stratigraphic trap on the other hand has no structural changes but in most instances has trapped gas and oil, where any is present, by a change in character of the formations. The shore line type of East Texas oil field is the result of sand accumulations upon the ancient shore of the Woodbine sea and having intermingled with this sand silts and shales, probably source bed material, and the whole was covered by the chalks settled out of a more recent Austin sea. This cap of chalk imposed upon the sands of Woodbine and Eagle Ford age acted as a seal and kept the gas and oil from escaping from the Woodbine formation.

To have determined the position of the East Texas oil field by geophysical work would have been very difficult because of lack of "marker" or "key" beds. These marker beds are of such character and lie in a position where the elastic waves created by the discharge of the explosive at the surface will be reflected back to the recording instruments on the surface and in this manner structure can be mapped.

The trouble in East Texas is that there are no marker or key bed stratas because the Woodbine sand lies quite flat along the top although it increases in thickness as the distance from the east edge is increased. The present thick sand section known as the "Fairway" running north and south through the heart of the field is in all probabilities an ancient barrier reef such as now found offshore along the Gulf of Mexico and which form the long chain of low lying sand islands so conspicuous around the boundary of Texas on the Gulf side.

The theory now advanced by the geologist as to means to be employed to locate these hidden pools of the stratigraphic type is to first make a general study of the entire area under consideration. Then gradually concentrate upon the more likely areas where conditions in times past may have been favorable for the deposition of both source bed and reservoir material. The next step is to drill "exploratory" holes, all cuttings from these holes to be carefully saved and examined and the complete stratigraphic section built up in that way so regional conditions can be studied in more detail.

After a series of "exploratory" holes have been drilled the stratigraphic sections will be compared and correlated and in this way it will be possible to determine nonconformities, regional dips, probable faulting, and many other geological features of importance in tracing the position of "hidden" reservoirs of gas and oil. This is a method of "deduction" rather than one where the evidence is easily obtainable but with the present day knowledge of oil fields and general geology of the areas where oil is most liable to be found it is not a difficult matter for the petroleum geologist to work very intelligently with these data and draw sound conclusions.

The principal difficulty in this general scheme is financing the work. Regional work should be done by some department of the federal government and much of the local detailed work can be done by state geological surveys and then companies financially able should undertake the final detailing of the limited region within which it seems possible "hidden" reserves of oil may be found.

The interest of the federal government in such projects can be based upon desire to locate additional reserves of oil as a matter of public policy and for national defense. The state has an interest in all mineral resources found within its boundary because the development of such resources gives employment to its citizens, and also because the state government directly benefits through taxes collected upon the gas and oil produced. The oil companies need additional reserves of oil to keep their refineries running.

The means are all at hand to carry on exploratory work of this broad and general nature if there was some way of getting such a movement started by all interested parties. If not undertaken reasonably soon there is a possibility of a shortage of crude oil available for daily delivery from existing wells sufficient to meet daily refining requirements. Reserves that cannot be brought to the surface fast enough to supply current demand must be discounted in importance and what this country needs is several flush oil fields where there is an excess of crude oil available, but the rate of its production is controlled to conserve the supply and stabilize the price structure of the industry.

You should find of interest in this connection the article by A. I. Levorsen, on "Stratigraphic Versus Structural Accumulation," in The Oil and Gas Journal, of March 26, 1936.

WHY THEY CALLED IT *Flow-Bean*

Specially constructed valves to restrict or regulate the flow of gas and oil through tubing or casing by limiting the size of the pipe opening are referred to commonly as "flow-beans". The origin of the term goes back to the early days of the industry, when oil operators, familiar with the swelling action of beans soaked in water, introduced a bag of them into the hole when they wanted to reduce the flow. The results achieved often were far from positive, so various other devices were experimented with. In time carefully engineered valves and bottom-hole chokes were adopted. These yielded a degree of efficiency and accuracy unobtainable before. But the old-time designation "flow-bean" continued to be used for the modern appliances. "Choke" and "choke-valve" are other names.

Converting Diesel Oil Engine to Use Natural Gas Fuel

What would be the approximate loss of power, if any, from converting a 250-horsepower full diesel engine to natural gas testing 626 B.t.u. to 600 B.t.u. at an altitude of 5,000 feet above sea level?—R. G. P.

Definite answer cannot be made to your question because you do not state the make or serial number of the engine you intend to convert. However, if it is possible to change the engine over to run on natural gas the following factors may be used.

A gas containing 1,000 B.t.u. per foot would increase the engine rating about 20 per cent over the fuel-oil rating. This diesel engine operating at 5,000 feet elevation would have a rating about 10 per cent less than sea-level rating, or would be rated at 225 horsepower using fuel oil.

If the use of gas increases the rating of the engine 20 per cent, multiply 225 by 120 and determine the rating, for this engine using 1,000 B.t.u. gas would be 270 horsepower.

If this engine will run on diesel fuel it is safe to use four-tenths of a pound of fuel per BHP hour. This gives 90 pounds or 12.15 gallons of fuel costing 4½ cents per gallon or .5467 cents cost per hour if engine efficiency is disregarded.

If this engine requires 10,500 B.t.u. of natural-gas fuel per horsepower hour and the fuel available contains 800 and 626 B.t.u. respectively the engine rated at 270 horsepower would require 3,547 and 4,529 feet per hour respectively.

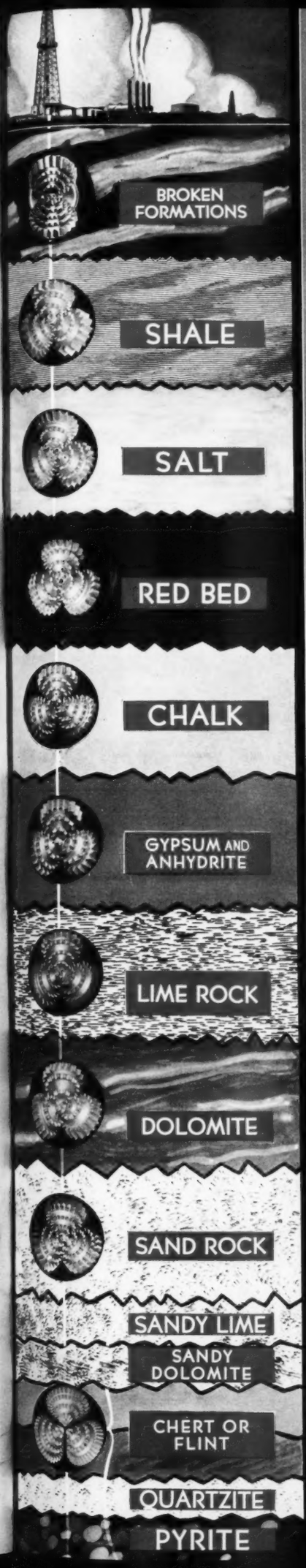
Comparing this fuel requirement with the cost of oil at 4½ cents per gallon indicates the higher B.t.u. content gas can cost as much as 15.25 cents per thousand and the lower B.t.u. content gas not more than 12 cents per thousand to equal the cost of running the engine with natural gas instead of diesel fuel oil.

There are many factors that must be considered in making any final decision before making this change-over and it would be best for you to consult the manufacturer of the engine you have for his recommendations. Give type and serial number and general description of the engine to assist the manufacturer in checking up on his records.

Sucker Rods Are Hard to Cut With an Acetylene Cutting Torch

A short time ago I found some old sucker rods which could not be cut with an acetylene torch. Could you tell me what might be the properties of these rods and the analysis of the metal?—J. W. B.

We cannot give you specific details why a normal acetylene cutting torch flame would not cut these old sucker rods but it is quite probable they were from a batch of special rods containing a high percentage of copper. Some experimenting has been done with rods made of this character metal, the copper being added to retard corrosion and lengthen the life of the rods. If this assumption on our part is correct it is quite possible that the cutting torch would not function in a normal manner for the copper would melt at about 1,929 to 1,943° F. and fuse at 2,200° F. Steel does not melt until a temperature of about 2,372 to 2,532° F. is reached and iron fuses at 2,800° F. The difference in the melting and fusion temperatures of the two metals will probably account for your inability to cut these sucker rods with an acetylene torch. This type flame is simply not intended for that purpose, although it will cut normal steel readily.



HUGHES TOOL CO.

ANTICIPATES THE *Performance Demands* OF THE INDUSTRY

With

"TAILOR-*Made*" ROCK BITS

For

EVERY ROCK BIT FORMATION

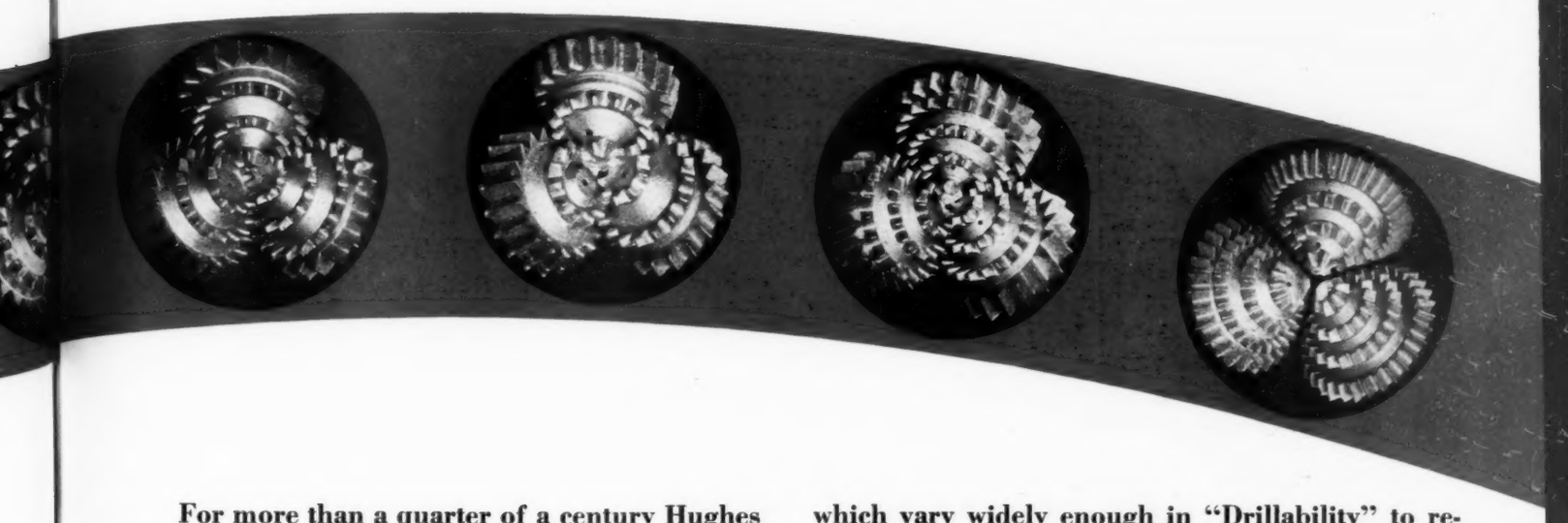
HUGHES TRI-C

HUGHES TOOL

WE ROCK BITS

ARE ESPECIALLY DESIGNED FOR

Specific Formations-Drilling Weights and Rotary Speeds



For more than a quarter of a century Hughes Tool Company, through the manufacture of dependable Rock Bits, has co-operated with the Industry in its ever-increasing search for oil.

Hughes Rock Bits successfully met drilling demands of 1910—they are meeting them today.

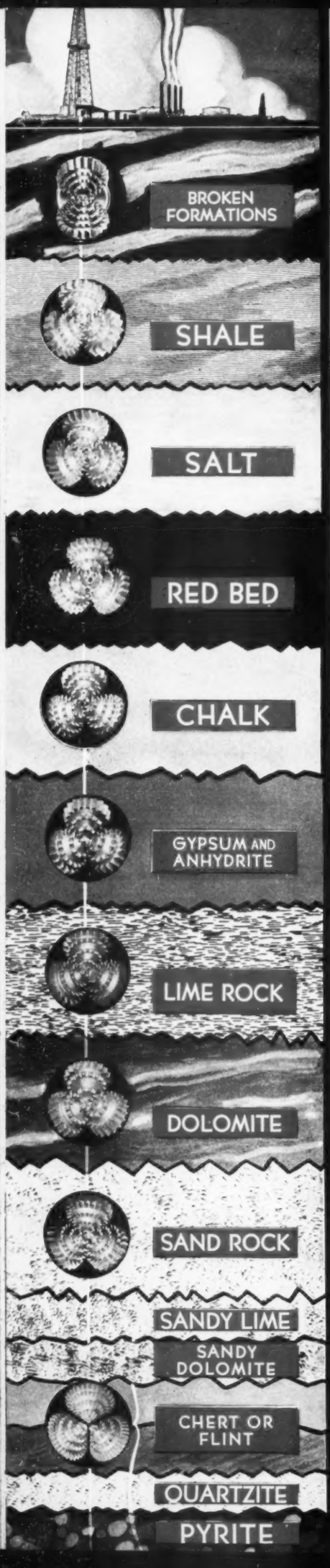
Years of experience in laboratory and field have proven the necessity for an "Individual" Bit for every Rock Bit formation. Formations are like people—they are all different. Shale in California does not drill like shale in Kansas; or lime rock in Oklahoma like lime rock in New Mexico.

Even in one well—formations often occur which vary widely enough in "Drillability" to require two or more different types of Rock Bits if maximum economy of time and bits is to be obtained.

Hughes Tool Company meets today's vigorous demands of the drilling Industry with "Tailor-Made" Rock Bits—Rock Bits especially designed for your formation and to meet your drilling requirements.

While any Hughes Rock Bit will make fair footage in any Rock Bit formation—remember, you can now get a Hughes Bit, proven superior for a specific formation.

OL COMPANY, HOUSTON, TEXAS, U.S.A.



HUGHES "TAILOR-Made" ROCK BITS

MEAN INCREASED DRILLING EFFICIENCY AND LOWER DRILLING COSTS

HUGHES "Two-Cone" Rock Bit for Broken Formations

Where sticky formations are encountered between rock layers too hard to drill with a fish tail or drag bit—The Hughes "Two-Cone" roller bearing Rock Bit will prove superior to any other bit. Unusually large clearance between head and wall of hole prevents balling up—while the self-cleaning teeth, an exclusive feature, assures progress in the softer formations. Even if bit has to be spudded to remove the ball, economical hole can be made because round trips are saved.

HUGHES "OSQ Type" Tri-Cone Rock Bits

For shale, salt, red bed, chalk, gypsum, anhydrite, etc. Hughes OSQ type Tri-Cone Roller Bearing Rock Bits have "stepped up" footage per bit to an exceptional degree. Increased tooth depth, improved action on bottom, self-cleaning hard faced teeth and effective flushing combine to add many feet of hole to each round trip—thus cutting down the bit cost per well.

HUGHES "D Type" Tri-Cone Rock Bits

Hughes "Type D" Tri-Cone Roller Bearing Rock Bits are making enviable records for footage and speed in lime rock and shale. They have "set a pattern" for performance in lime rock territories. Fully self-cleaning, with sturdy teeth, hard faced for long life—they successfully cut interstratified layers of shale, sandy shale, gypsum, medium hard sand rock or similar formations.

HUGHES "W Type" Tri-Cone Rock Bits

Hughes "Type W" Tri-Cone Roller Bearing Rock Bits are especially designed for Dolomite or Dolomitic formations which require strong teeth for crushing action. Where little or no abrasive exists Hughes "Type OWS" is recommended because it has more action on formation. Where considerable abrasive matter is encountered with dolomite, "Type WS-2" should be used for best results.

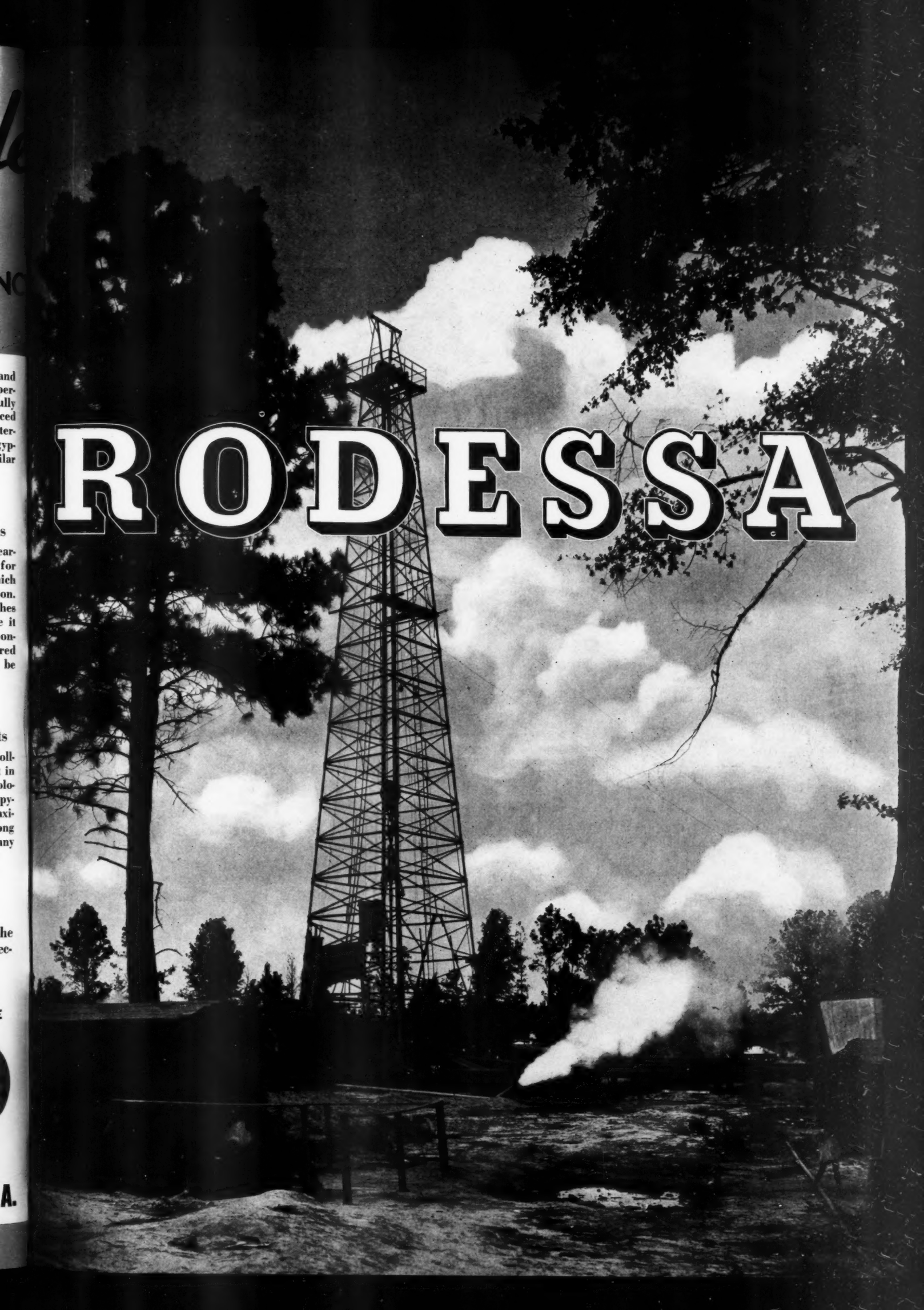
HUGHES "HR Type" Tri-Cone Rock Bits

Hughes Hard Rock Type Tri-Cone Roller Bearing Rock Bits are the last resort in such hard abrasive formations as dolomitic sand rock, chert, quartzite, iron pyrite and similar formations. With maximum cutting surface, hard faced for long periods of operation, they answer many hard rock drilling problems.

The following diagram illustrates, in advancing order of hardness, the general types of formations grouped for the type of Hughes Rock Bit recommended:

SOFT	MEDIUM	MEDIUM HARD	HARD	HARD ABRASIVE
Broken Formation with Rock Layers and Gumbo Shale Breaks	Top, Shales, Salt, Gyp, Anhydrite, Red Bed, Chalk	Lime Rock Hard, Shale Medium Sand Rock, Hard Anhyd.	Dolomite Dolomitic Lime Rock Sand Rock	Chert Pyrite Quartzite, Dolomitic Sand R. Chat
HUGHES TWO-CONE TYPE	TYPE "OSQ" HUGHES TRI-CONE	TYPE "D" HUGHES TRI-CONE	TYPE "W" HUGHES TRI-CONE	TYPE "HR" HUGHES TRI-CONE

HUGHES TOOL COMPANY • HOUSTON, TEXAS, U.S.A.


RODESSA

Potential in North

By MITCHELL TUCKER

Due to the many known structures in the area generally referred to as "North Louisiana" now producing from young and shallow beds, and the probability that older and known producing beds elsewhere underlie these structures, possibly conforming to them, this territory is regarded as being one of the major possibilities for future reserves in the United States. The marine Trinity series of the Lower Cretaceous has been the object of deepest drilling, while the older Mesozoics and Paleozoic beds remain untouched thus far.

Although the Rodessa oil and gas field has grown to immense proportions, it is still contended that its real and ultimate importance will lie in the stimulation of deep exploration on other known North Louisiana structures. This same statement is now properly made of the recent discovery of oil in the Travis Peak of older age in the Trinity, at Cotton Valley.

In order to provide current data on these known North Louisiana structures, now regarded as having vast potential reserves in deeper horizons, the accompanying data sheet is given, which sets out the number of producing wells, proven acreage, present daily production, accumulated oil and gas production to July 1, 1936, type structure, depth and name of present producing horizons, and reference to the deepest horizon yet tested on each structure.

As indicated by the data sheet, most structures have been tested for production in the Glen Rose (Trinity) horizons following the Rodessa discovery. These same structures will no doubt now receive additional tests to lower formations, prompted by the exploration of deeper sands at Cotton Valley, where four distinct producing zones were indicated below the Rodessa horizons in the Travis Peak and lower marine Trinity, and before the well was plugged back and completed as a large flowing producer in a sand member of the Travis Peak, uppermost saturated zone to be found below the Lower Glen Rose horizon productive at Rodessa. The upper portion of the Travis Peak has been tested in several wells across North Louisiana during the last few years without success, and there is some reason to believe that the occurrence of the sand members of the Travis Peak will not persist throughout the territory.

LOWER GLEN ROSE

Even though one or more deep tests have been made on many of the known structures already, the majority of them were bottomed in the top of the Lower Glen Rose, which point informed geologists consider to be far from a complete test of the location now. Many additional flank tests in all directions are probable, while some are now in the process of drilling. In view of the extensive leasing during the past year, geophysical exploration, and the new deep objectives regarded to have attractive possibilities, it is expected that North Louisiana will remain one of the most active wildcat areas for the coming year.

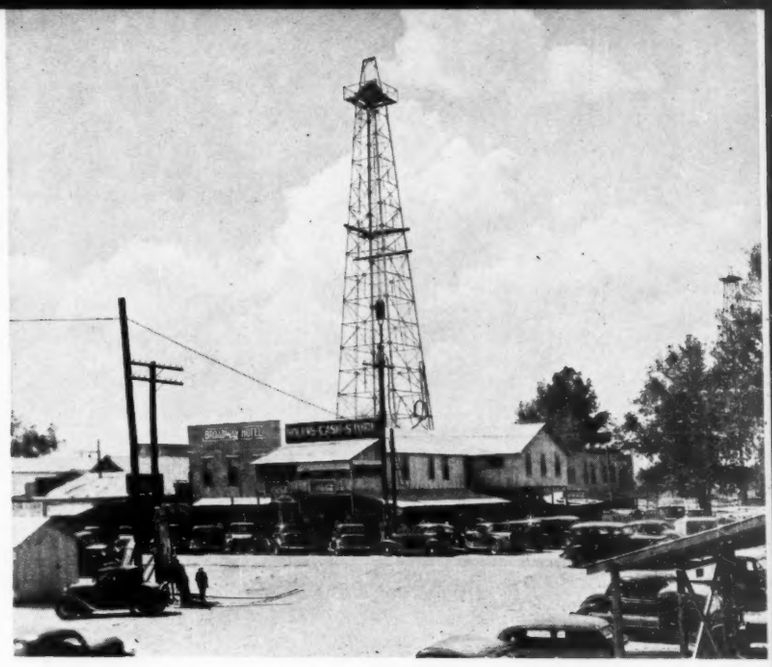
Although shore line or stratigraphic trap accumulations do not lend themselves easily to present-day exploratory methods, these possibilities cannot and are not being overlooked in the marine beds of the Lower Trinity.

Following the Rodessa oil discovery, an extensive seismic campaign followed throughout the entire North Louisiana section. During the last 12 months approximately 1,000,000 acres have been taken under 6 months to 1 year geophysical option. The flanks of all producing reservoirs were thoroughly checked for possible fault line features in the lower beds. The greater portion of this work was done to map the Lower Glen Rose, using the massive anhydrite immediately overlying it as the reflecting zone. With the ever increasing indications that lower beds will be productive under favorable conditions, much of this territory is again thrown open for another geophysical campaign, this time having as their mapping objective the Travis Peak, marine Trinity series, or older beds of the Mesozoic.

Another factor which will have an important bearing upon wildcat exploration throughout the territory during the coming year is the large amount of acreage which was assembled by major companies during the last 12 months. Much of this, perhaps, was taken for protection, but the majority of it was assembled following the discovery of oil in the Lower Glen Rose at Rodessa, and in anticipation of possibilities below this

United Gas Public Service Co. compressor station

Structures in Louisiana



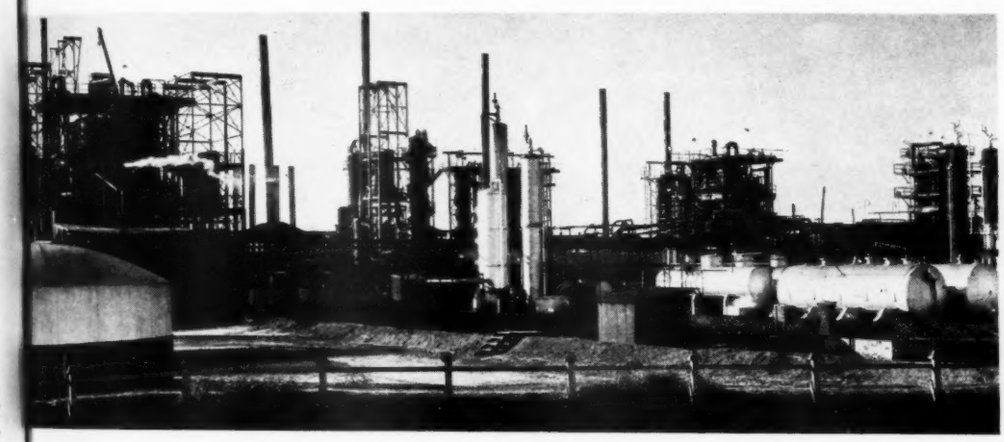
Town lot drilling in Rodessa

horizon. In round numbers the total acreage leased during the 12 months following the Rodessa discovery was 665,100 acres, divided into parishes as follows:

Parish—	Leased acreage during last 12 months
Bienville	86,000
Bossier	18,700
Caddo	28,000
Caldwell	13,200
Claiborne	47,300
DeSoto	27,600
East Carroll	1,400
Franklin	1,100
Grant	3,300
Jackson	28,000
LaSalle	66,000
Lincoln	25,000
Morehouse	66,000
Natchitoches	24,000
Ouachita	11,000
Red River	50,600
Richland	19,800
Sabine	3,300
Union	55,600
Webster	44,000
West Carroll	2,200
Winn	44,000
Total	665,100

This same influence was felt to some extent in the counties of southern Arkansas, which underwent a very active leasing campaign following indications of major oil accumulations in the Permain lime at Smackover. During the same 12-month period about 856,000 acres were taken under lease in southern Arkansas.

The border counties of East Texas, including Bowie, Cass, Harrison, Marion, Panola and Shelby, also profited by the Rodessa discovery, as about 95,000 acres have been leased in this territory during the past 12 months. Several important wildcats are now drilling here following this leasing activity.



Bossier refinery

RESERVES

Reserves in North Louisiana may properly be divided into three groups, (1) those from older and shallower pools producing from the beds of Upper Cretaceous age, (2) those from producing horizons below the triple unconformity between the Upper and Lower Cretaceous, and (3) those yet undiscovered.

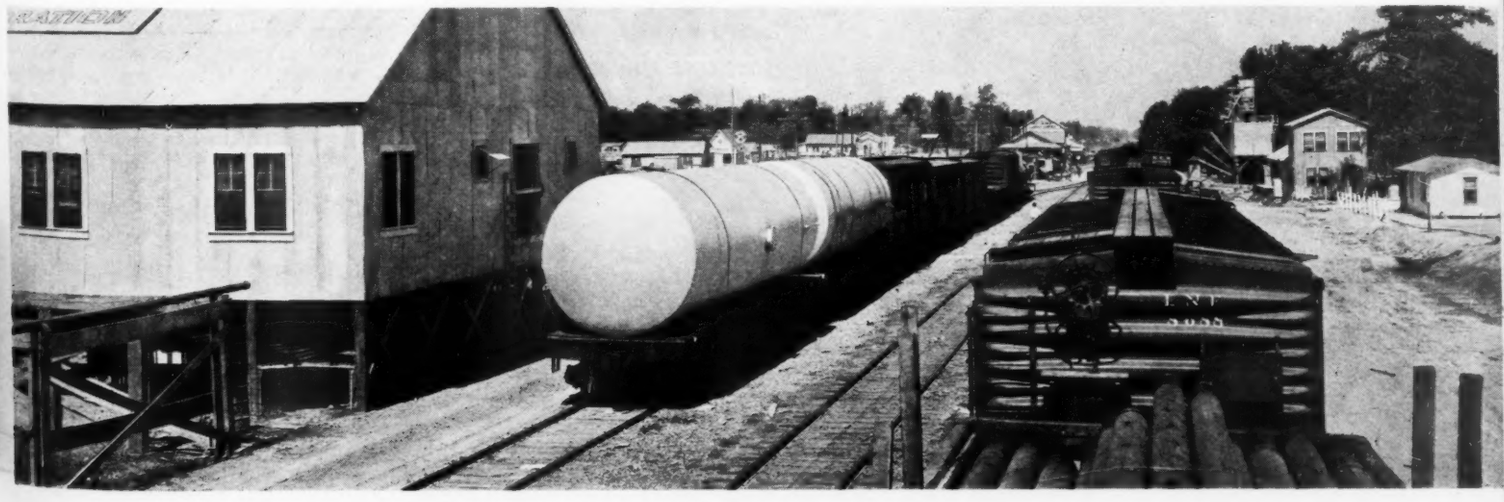
The proven reserves for Groups 1 and 2 have been reliably estimated as follows, assuming of course that controlling factors remain unchanged:

Group 1—Upper Cretaceous 45,000,000 bbls.
Group 2—Lower Cretaceous 220,000,000 bbls.

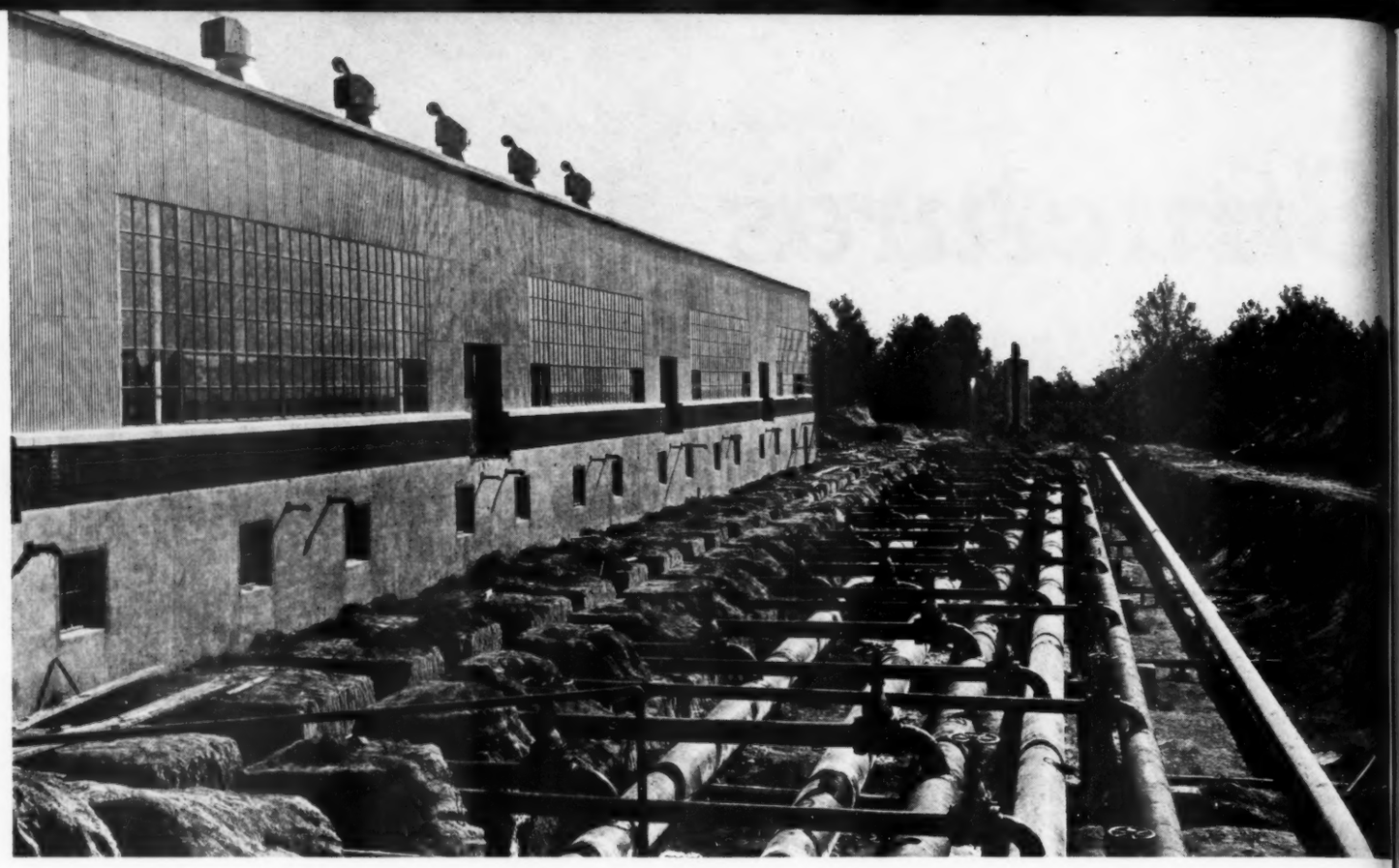
Group 2 includes only the proven oil area at Rodessa, Cotton Valley, Haynesville and Pine Island. It is altogether possible that further extensions which will be made at Rodessa and Cotton Valley will greatly augment the developed reserves, but as yet such must be classified as "undiscovered." Furthermore, this estimate does not include the distillate production which has been developed in the Rodessa, Sibley, Converse, Ruston, and other smaller reservoirs, which as yet are more properly classified as gas reserves.

In giving brief consideration to undiscovered reserves in the North Louisiana area, it must be noted that the territory's deepest wells thus far have only penetrated the upper portion of the lower marine Trinity series, leaving the unexplored marine series, older Mesozoics and possibly the upper Paleozoics as potential possibilities for future development. The depth at which the lowest of these beds will occur is difficult to predict at this time, but they are of such depth, and through difficult drilling formations, that their exploration will be unattractive until all other possibilities have been exhausted throughout the marine Trinity series, occurring between 8,000 and 9,000 feet in the northern portion of Webster and Claiborne Parishes. Only two wells have been drilled deep enough to penetrate the marine beds, each one quite recently, and each one strongly in-

(Continued on Page 100)



Oil brings new activity to Rodessa yards



Header pipes from both the Louisiana and Texas sides of the Rodessa field into United Gas Public Service Co. 8,000-horsepower compressor station

Natural Gas, C and Gasoline E

With an estimated daily production of 700,000,000 feet of utilized natural gas North Louisiana is next to the largest concentrated source of natural gas in the United States. In addition to the many natural gasoline and carbon black plants built to utilize portions of this gas, the territory is served by a vast network of natural gas trunk lines distributing the product for domestic use throughout the entire Southwest. The significant fact about North Louisiana's gas production is that this is one of the two territories which produce appreciably more gas for domestic use than needed locally.

Table 1 sets out the total natural gas produced in northern Louisiana by fields and by years. Of the 244,662,547,000 feet produced in 1935, 62,957,379,000 feet was processed directly in natural gasoline plants, 54,113,611,000 feet was burned at carbon black plants, and approximately 127,591,577,000 feet was run to natural gas trunk lines for domestic distribution. This does not include residue from certain gasoline plants, neither does it include the large amount of gas that has been wasted in the Rodessa field during the past year which at present is only being utilized to provide energy to the natural flowing wells.

GASOLINE PLANTS

At the present time there are 24 natural gasoline plants operating in the North Louisiana territory, three are in process of enlargement, and two are under original construction. Table 2 gives ownership, location, present daily production, and yield of these plants. During the month of August, 1936, an average combined daily production of approximately 215,900 gallons was processed by the plants, 192,000 gallons of which was produced from the six plants now operating in the Rodessa field. When enlargement or construction work has been completed at all plants the combined daily average production is estimated to be approximately 380,000 gallons, 340,000 gallons of which will be from plants operating in the Rodessa field.

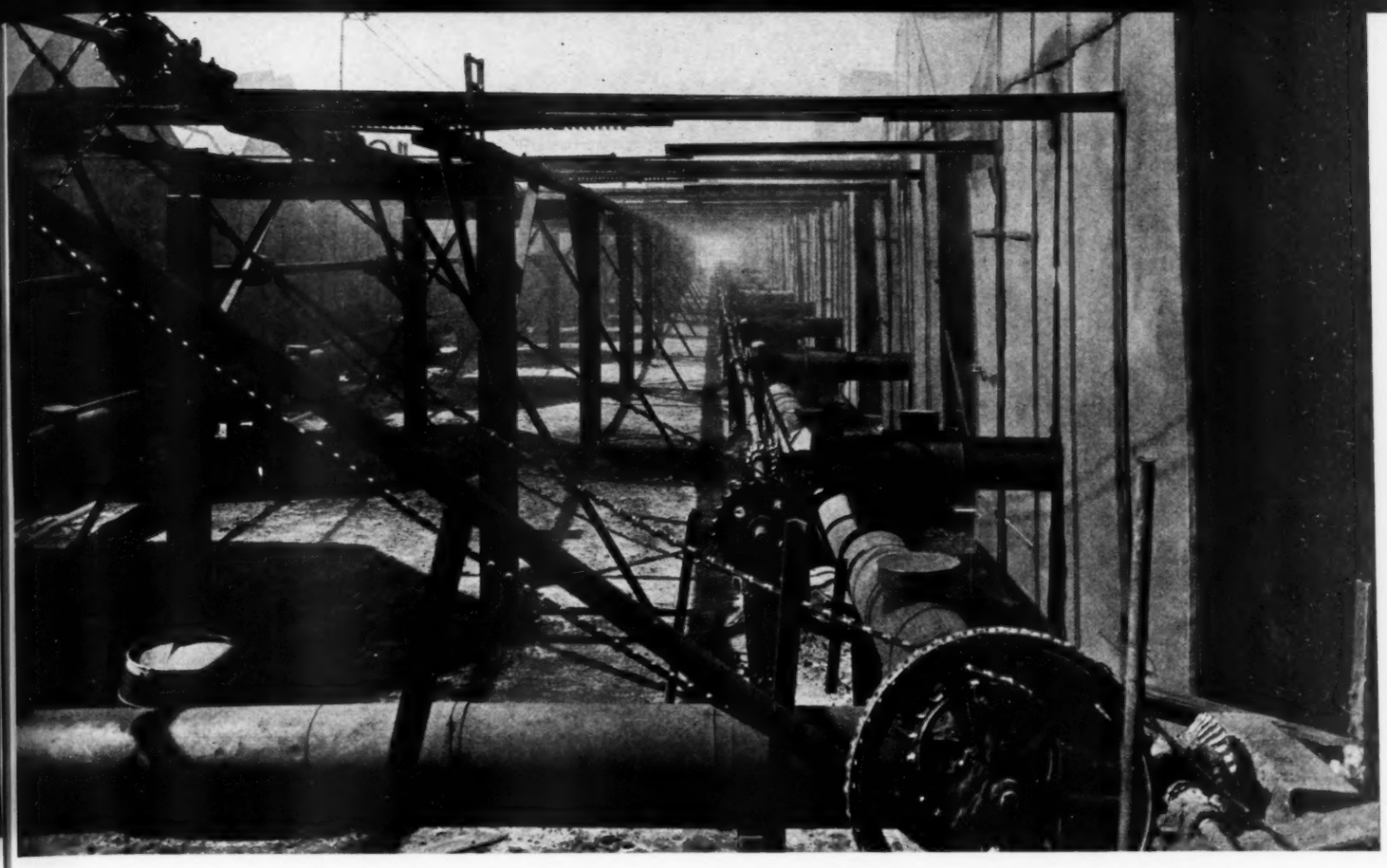
United Gas Public Service Co. and Arkansas Fuel Oil Co. both operated large plants at Rodessa when it was only a gas field, and the other plants have been constructed within the past year following the discovery of gas and oil at lower depths. Only the most modern and efficient plants have been found practical in this field, and most of them are equipped to process or blend some distillate with the natural gasoline produced.

CARBON BLACK PLANTS

Eighteen carbon black plants were operated in northeastern Louisiana during 1935, 17 in the Monroe field and one in the Richland field, producing a total of 64,676,636 pounds of carbon black from 54,113,611,000 feet of gas. Louisiana is the second largest producer of carbon black (Texas first), having produced a total of 1,378,240,153 pounds since production was first begun in 1919. The average yield has been 1.24 pounds per 1,000 feet of gas burned.

Although legislative restrictions and high per-pound taxation crippled the carbon black industry for several years, causing many plants to move to Texas, these matters have now been corrected and the industry is in a more healthy condition than it has been for some time, especially with

View taken of Myrtis gasoline plant of the United Gas Public Service Co. while construction work in the enlargement of the plant was under way. This work is expected to be completed within another month



Conveying system and power drives, Imperial Oil and Gas Products Co. plant, Sterlington, La., carrying carbon black from burners to packing units

...s, Carbon Black ...e Expansion

the increased demand for its product. The only law which has a close bearing on their operation today is one providing no casinghead gas may be run directly to carbon black plants having a gasoline saturation greater than .15 gallon per 1,000 feet. This permits gas from the southern part of the Monroe gas field to be run directly to the carbon black plants. Residue from certain gasoline plants is also burned into carbon black.

Fifteen of the plants employ the channel process and produce a high grade product, totaling 47,397,926 pounds in 1935, while three of the plants are equipped to produce the gray black or retort black, with a smaller yield per 1,000 feet, totaling 17,278,710 pounds in 1935.

A chemical analysis of the highest grade black produced indicates:

	Per cent
Carbon	98.13
Ash	.04
Grit	03
Moisture	1.80
Total	100.00

Approximately 30 per cent of the carbon black produced here is exported to foreign countries, and the product finds a ready market in the manufacture of automobile tires, mechanical rubber goods, inks of all kinds, carbon paper, typewriter ribbons, paints, enamels, lacquers, and miscellaneous products.

DISTRIBUTION

The distribution of North Louisiana gas may be considered in two divisions, the eastern portion comprising the Monroe, Richland, and Epps fields, and the western division comprising the Rodessa field and the older and shallow fields.

Of the 204,018,490,000 feet of gas produced last year in the eastern portion of the state, approximately 25 per cent was burned for carbon black, 73.5 per cent was run directly into natural gas trunk lines for domestic distribution both in and out of the state, .05 per cent was processed at the five gasoline plants situated there, and 1 per cent was unaccounted for in pipe line losses, etc.

In the western fields approximately 40,644,057,000 feet of gas was produced in 1935, 23,357,380,000 was processed at natural gasoline plants, while 17,286,687,000 feet was run to natural gas trunk lines. The greater portion of the residue gas from this section was run to pipe lines for domestic distribution. This will not be true in 1936 as only two of the natural gasoline plants at Rodessa have facilities for domestic distribution and they are both operating to capacity. The 1936 figures for this section of the state will be much greater due to the prolific gas production developed at Rodessa, and an accurate estimate of the daily waste in the field would be impossible, although estimates have ranged as high as 600,000,000 feet daily.

NEW DEVELOPMENT

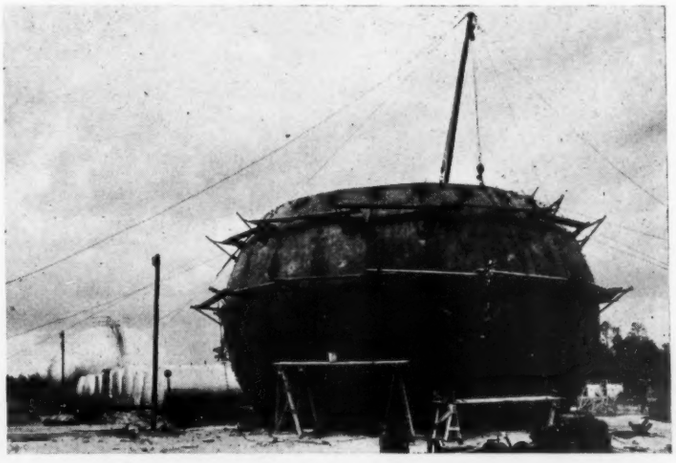
At present Arkansas Fuel Oil Co. is constructing a 15,000,000-foot absorption gasoline plant in the Sligo field where recent Pettitt sand (Lower Glen Rose) production has been developed. Additional wells are being drilled to supply the new plant.

Caltexo Corp. is completing its 50,000,000-foot absorption natural gasoline plant in the Rodessa field, built to utilize the gas produced from Standard Oil of Louisiana properties.

Arkansas Fuel Oil Co. is enlarging its Rodessa absorption plant from 35,000,000 to 60,000,000 feet daily, and has recently tied into additional Rodessa townsite wells to increase its capacity. The work is expected to be completed in about 45 to 60 days.

Eastern Texas Refining Co. operated a blending plant on a capacity of about 10,000,000 feet daily for six months, but is now completing an enlargement program to handle about 40,000,000 feet daily. This plant is equipped to manufacture a stable motor fuel, with an endpoint of 400° F. for the finished product, through the vapor blending of Rodessa gas and distillate.

United Gas Public Service Co. has under way the largest program of expansion in the Rodessa territory, which will permit the utilization of a



Construction of an additional spheroid at tank battery of Arkansas Fuel Oil Co. Rodessa gasoline plant

great portion of the gas now being wasted in the field. This program entails the laying of about 45 miles of 24-, 18- and 16-inch gathering and transporting lines through both the Louisiana and Texas sides of the field, and to points of distribution: tion north of Shreveport, and from there into its domestic system serving many eastern and southern points. Even with this expansion the system will be able to handle gas only from United Gas Public Service Co.'s properties.

TABLE 1—NATURAL GAS PRODUCED IN NORTH LOUISIANA

(Figures given in 1,000 cubic feet)*

Field	1933 and prior	1934	1935	Total
Bellevue	1,964,447	120,920	78,740	2,164,107
Bethany	3,350,032	934,000	743,336	5,027,368
Bull Bayou	45,154,956	857,664	714,327	46,726,947
Bunkie	.....	.....	111,568	111,568
Caddo-Pine Island	130,115,879	1,138,747	1,293,991	132,548,617
Carterville	16,954,464	.....	.....	16,954,464
Cotton Valley	67,359,420	1,963,838	1,767,971	71,091,229
Elm Grove	182,367,194	2,588,649	2,137,970	187,093,813
Epps (East Carroll)	313,017	95,538	127,249	535,804
Epps (West Carroll)	255,710	46,704	45,755	348,169
Holly	.....	34,040	31,932	65,972
Homer	5,148,550	190,784	.....	5,339,334
Lake Bisteneau	2,012,421	.....	.....	2,012,421
Longwood	4,166,972	543,454	653,079	5,363,505
Monroe	1,511,223,449	163,376,378	181,698,039	1,856,297,866
Richland	368,005,950	32,373,118	21,450,393	421,829,461
Rodessa	9,395,001	13,934,264	22,346,119	45,675,384
Zwolle	159,981	.....	.....	159,981
Shongaloo	70,164,352	384,531	151,029	70,699,912
Sligo	25,378,544	3,952,601	4,910,034	34,241,179
Spring Hill-Sarepta	25,440,181	48,220	34,703	25,523,104
Sugar Creek	11,455,233	4,245,021	5,715,861	21,416,115
Tullos-Urania	5,500	.....	.....	5,500
Waskom	5,395,247	115,636	98,142	5,609,025
Total	2,498,029,108	227,554,371	244,662,547	2,970,246,026

*Figures from Louisiana Department of Conservation.

the construction of an 8,000-horsepower compressor station; and the enlargement of its Rodessa (Myrtis) gasoline plant from 60,000,000 to 140,000,000-foot capacity. In laying out the pipe line gathering system United has taken into account the possible future extensions of the field. This company's principal interest heretofore has been in the distribution of natural gas, and its position as the largest producer of natural gasoline in the Rodessa field has been the result of processing the casinghead gas to make the resultant residue marketable. It has found it necessary to add to its Myrtis plant upon two occasions prior to this time.

The stripped or residue gas is to be transported through the gasoline plant, by the pressure given it at the compressor station, into the 23-mile 18-inch line now being laid to its Latex-Sarepta sta-

TABLE 2—ACTIVE NATURAL GASOLINE PLANTS NORTH LOUISIANA

Field and company	Present dly. prod. (gallons)	Avg. G.P.M.
BOSSIER PARISH		
Sligo:		
Ark. Fuel Oil Co.*	6,000	(Est.)
CADDO PARISH		
Caddo:		
Gulf Ref. Co.	3,500	
Standard Oil Co.	4,200	
Stanolind Oil & Gas	2,800	
Total Caddo	10,500	2.1
Rodessa:		
Ark. Fuel Oil Co.†	35,000	
Eastern Texas Refining†	12,600	
Caltexo Corp.*	40,000	(Est.)
Glen Rose Gasoline Co.	21,000	
Tide Water	49,000	
United Gas Pub. Serv. Co.†	60,000	
Rodessa Gasoline Co.	15,000	
Total Rodessa	232,000	.80
CLAIBORNE PARISH		
Haynesville:		
Ohio Oil (two plants)	3,500	1.4
Homer:		
Ark. Fuel Oil Co.	5,600	
Gulf Refining Co.	5,600	
Standard Oil Co.	4,200	
Total Homer	15,400	1.6
Sugar Creek:		
United Gas Pub. Serv. Co.	12,600	.8
MOREHOUSE PARISH		
Monroe:		
Columbian Gas Co.	280	.15
OUACHITA PARISH		
Monroe:		
Columbian Gas Co. (two plants)	3,500	
J. M. Huber Co.	1,400	
United Carbon Co.	640	
Total Monroe	5,720	.15
RED RIVER PARISH		
Bull Bayou:		
Magnolia Pet. Co.	700	1.1
RICHLAND PARISH		
Richland:		
United Gas Pub. Serv. Co.	7,000	.56
WEBSTER PARISH		
Cotton Valley:		
Ohio Oil Co.	2,100	
United Gas Pub. Serv. Co.	1,680	
Total Cotton Valley	3,780	1.1

*Now under construction. †Now being enlarged.

Rodessa Gas-Oil Ratio

Reduction in the gas waste on the Louisiana side of the Rodessa field, previously estimated at 360,000,000 feet daily, to approximately 250,000,000 feet, has been effected through the gas-oil ratio order issued September 15 by the state department of conservation, it is reported. Cut back of oil wells to a ratio of 12,500-to-1 and distillate wells to 25,000-to-1, has been completed by agents of the department.

At a special meeting of the Rodessa operators' committee, bottom-hole pressures and gas-oil ratios taken since the 30-day order went into effect, were submitted for study as a basis of recommendations which it will make to the department for another order.

PROVIDED FIRST OUTLET FOR RODESSA CRUDE

View of Standard Oil Co. of Louisiana semi-diesel main line pump station at Ida, Louisiana

Fully Heat-Treated Sucker Rods *are Best*

THE only sucker rods with full heat-treatment—normalized, *quenched* and drawn—are made by "OILWELL" by an exclusive process which is protected by basic process, product and equipment patents. Made in grade "A", "Y", "S" and "T". Look to "OILWELL" for the best in sucker rods.

SUCKER ROD ENGINEERING SERVICE

Often the same grade of sucker rods will not work efficiently in wells only 100 yards apart. Now "OILWELL'S" metallurgically and mechanically trained Sucker Rod Engineers can analyze the many pumping problems and specify the grade of sucker rod you need. Call on them to help you get the greatest possible efficiency in your pumping.

OIL WELL SUPPLY COMPANY

Subsidiary of United States Steel Corporation

Branch Stores in All Oil Fields

"OILWELL"

DEPARTMENT OF GEOGRAPHY
THE UNIVERSITY OF NEBRASKA

Crude Produced in Rodessa Is Typical Paraffin Base Oil

By A. W. TRUSTY
Louisiana Oil Refining Corp.

The Rodessa field, located in the northwestern corner of Louisiana and extending into Texas, has produced to date about 15,000,000 bbls. of high gravity, paraffin-base oil. The production comes from the Dees and Young sand at a depth of about 6,000 feet. The gravity of the oil varies somewhat; the heaviest oil is about 41.5 degrees A.P.I., while some of the wells are producing a water-white oil of 60 gravity. The average pipe line crude has a gravity of about 44.

The following tests were made on pipe line oil:

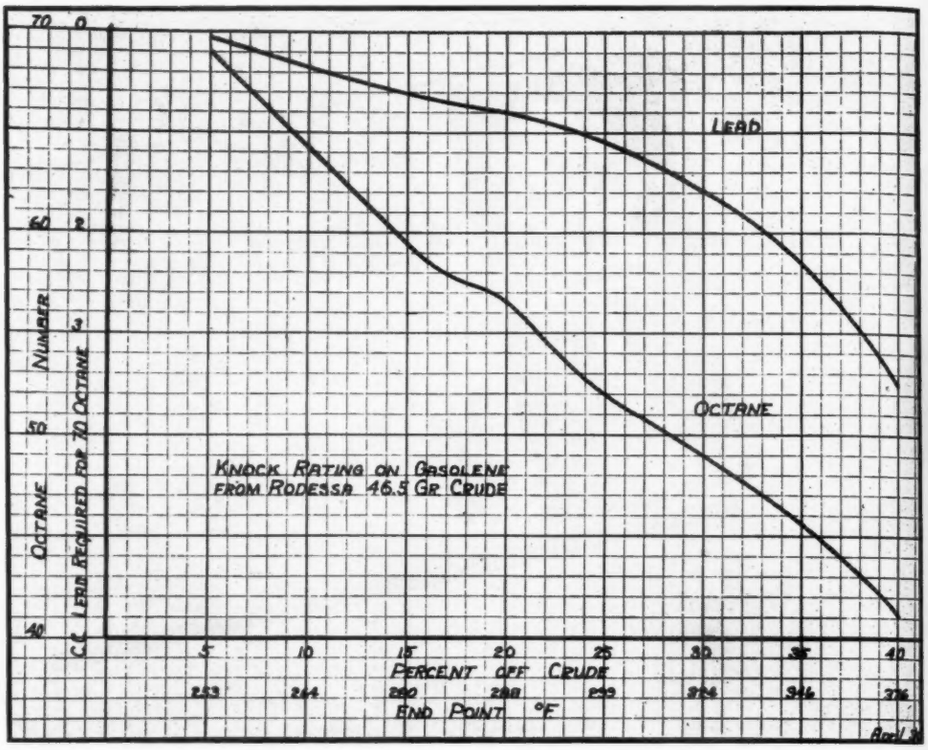
TESTS ON CRUDE

Gravity, °A.P.I.	46.0
Flash	Below atmospheric temperature
Viscosity S.U. at 100° F.	40
Viscosity S.U. at 50° F.	60
Pour test	0° F.
B.S.&W., per cent	0.3
Sulfur, per cent	0.20
Color	Dark green

CHARACTERISTICS OF THE GASOLINES

Various percentages of gasoline were distilled from Rodessa crude. The yields, knock ratings and other characteristics are shown:

Per cent off crude	5	10	15	20	25	30	35	40
Gravity	81.4	77.3	73.7	72.0	67.4	66.7	65.3	63.4
I.B.P.	76	88	88	98	104	106	107	112
10 per cent at	98	117	128	137	153	160	166	176
20	112	129	143	152	172	180	189	201
30	124	140	156	164	185	197	208	221
40	137	150	167	176	197	211	225	241
50	149	158	178	184	208	224	240	260
60	162	169	188	194	218	235	248	277
70	176	180	198	208	228	248	273	297
80	190	194	210	214	240	264	290	318
90	212	218	230	234	256	282	312	340
Endpoint	253	264	280	288	299	324	346	376
Per cent at 158°F.	57	50	31	25	11	9	8	5.5
Per cent at 212	90	88	81	79	54	40	32	25.5
Per cent at 221	90.5	90.5	84	88	65	48	39	30
Per cent at 284	..	..	..	97	96.5	91	76	63.5
Recovery	91.5	96.5	97.0	97.5	97.5	97.0	97.5	98.0
Octane number	69	64.2	59.5	56.5	52.0	49.0	45.5	41.0
Cc. lead required to equal 70 octane number	.05	.375	.625	.80	1.25	1.6	2.3	3.5
Color	30	30	30	30	30	30	30	30
Corrosion	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Doctor	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.



KEROSENE

The characteristics of the kerosene from Rodessa crude are as follows:

Gravity	49.6
I.B.P.	330
10 per cent at	360
20	370
30	380
40	393
50	404
60	416
70	423
80	449
90	477
Endpoint	518
Color	30+
Corrosion	Negative
Doctor	Negative
Burning test (24 hours)	Good
Color stability	Good
Sulfur, per cent	.02

SOLVENTS AND NAPHTHAS

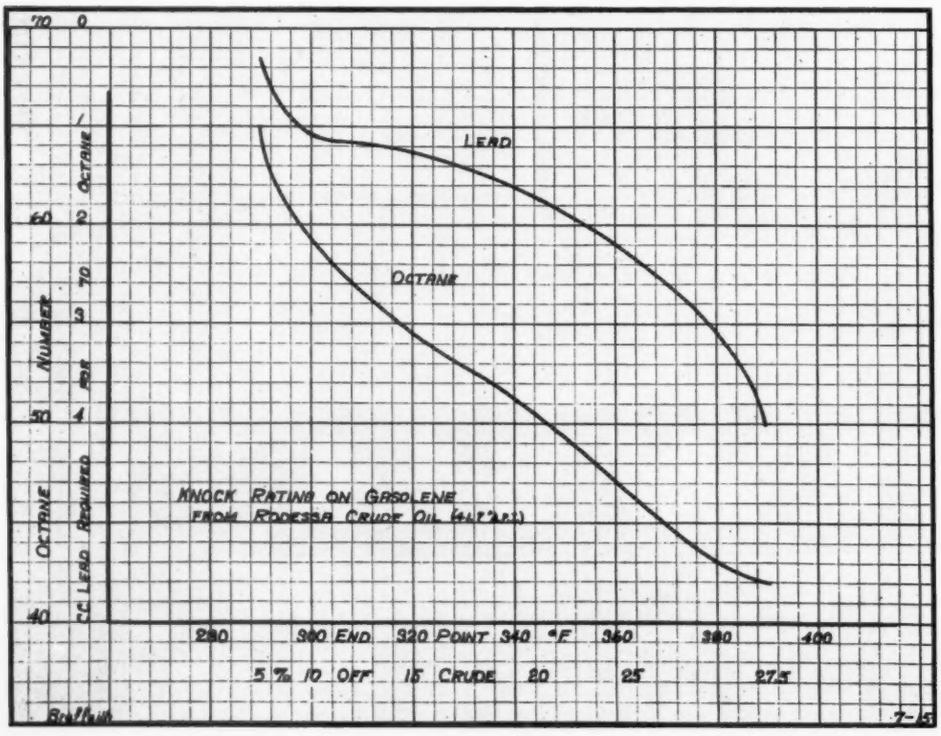
A large yield of special naphthas can be realized from this crude.

	Rubber solvent	Paint solvent	Stoddard solvent	Kerosene
Per cent off crude	13.0	7.5	11.0	16.5
Gravity	72.0	61.1	54.5	47.4
I.B.P.	99	203	300	390
10 per cent at	134	224	310	412
20	151	230	314	417
30	162	235	318	422
40	173	240	323	427
50	184	247	328	433
60	194	253	334	440
70	206	261	340	448
80	221	271	349	459
90	248	286	364	479
95	278	300	380	500
Endpoint	300	316	397	512
Recovery	97	98	98	98
Color	30+	30+	30+	30
Corrosion	Neg.	Neg.	Neg.	Neg.
Doctor	Neg.	Neg.	Neg.	Neg.
Octane number	57	...	...	...
Cc. lead required to equal 70 octane number	1.2	...	...	...

The sulfur and unsaturated hydrocarbon content on these naphthas are very low and these products have a good odor.

Due to the low octane number of the gasoline from Rodessa crude, it is desirable to produce

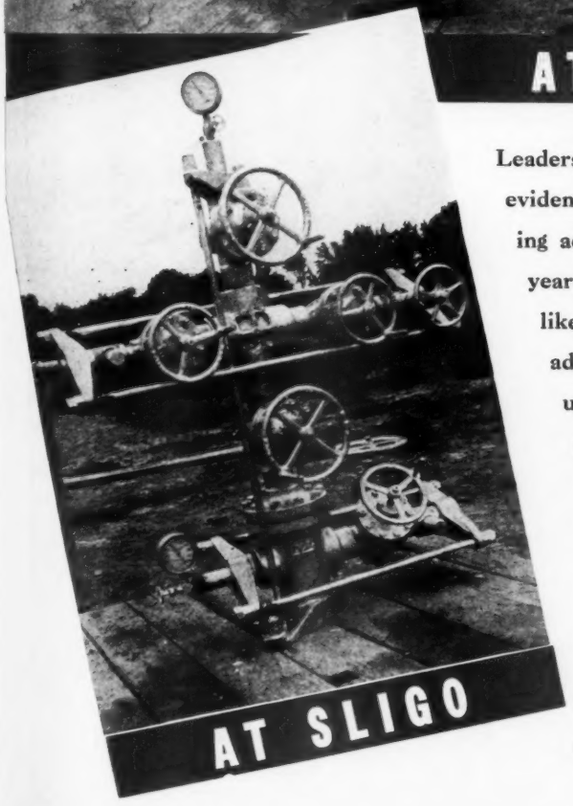
(Continued on Page 100)



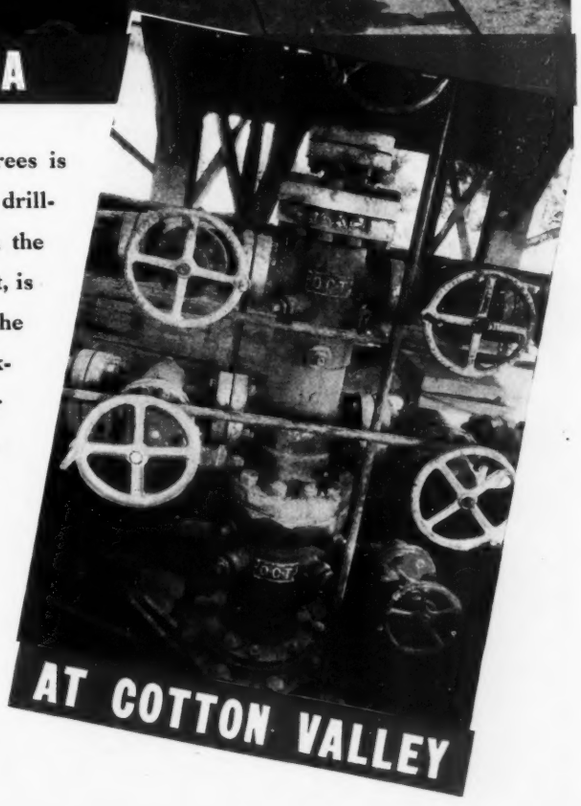
LOUISIANA, TOO, CHOOSES

TREES

AT RODESSA



AT SLIGO



AT COTTON VALLEY

Leadership of OCT Christmas-trees is evident here in Louisiana, where drilling activity has doubled within the year. Louisiana, in this respect, is like most other oil states, for the advanced design of well hook-ups by OCT has brought our representation throughout the Southwest to a position of unquestioned predominance.

Selling Through Supply Stores

OIL CENTER TOOL CO.

QUALITY O·C·T PRODUCTS

HOUSTON, TEXAS, U.S.A.

CABLE ADDRESS "OCENTOL"

North Louisiana Stratigraphy Gradually Being Worked Out

By A. F. CRIDER
Consulting Geologist, Shreveport, La.

The story of the oil development of the Sabine uplift and the adjacent territory has not yet been written. Almost every new wildcat well which is drilled to a depth of 5,000 feet or more opens a new storehouse of geologic information, and in the course of time the geologist who has access to this accumulated data will be able to gradually work out the true picture of North Louisiana stratigraphy and subsurface structure which at first was virtually a closed book to all. Each well is the magic key to open a new leaf of this book, and on the proper interpretation of the accumulated geologic data depends, in a measure, the economic success which is the basis of all of the exploratory work now being done and contemplated.

The change from shallow to deep drilling has not been revolutionary, but rather a process of advancement based on a more thorough knowledge of geology, and especially subsurface stratigraphy, which has been brought to light largely through the drilling of wells. The pioneer spirit, which has always been highly developed in those who have followed the oil development, and the hope "that a little deeper down I will strike the Mother pool," makes success assured.

In northern Louisiana the stratigraphy and structural relations of the Upper Cretaceous have long been fairly well understood by workers in this field who have access to the thousands of logs of wells drilled in this region, but the geology of the Lower Cretaceous is less known, because of the fewer number of wells which have penetrated the full Lower Cretaceous section, and of the more complicated stratigraphy and structural conditions, than that found in the Upper Cretaceous and Tertiary beds of the region.

Throughout the 4,000 feet or more of Lower Cretaceous sediments penetrated by the drill in this general region, only a limited number of distinguishing fossils have been found, leaving the correlation of definite horizons largely to stratigraphy. Fortunately, however, the change from one formation to another is so radical that where good cores and samples of wells are available little difficulty is experienced in the proper interpretation of the section. As a result of conditions which prevail, the driller, the scout, the lease buyer and the contractor, as well as the geologist, become familiar with such terms as "upper and lower anhydrite stringers," "massive anhydrite," "Oolitic zone," "Paluxy," and "Travis Peak red beds."

Accompanying this article is a geologic cross-section from the Bethany gas field, Panola County, Texas, to the O'Brien well in Issaquena County, Mississippi. It includes all that part of the Lower Cretaceous below the top of the Paluxy red beds, where present, through the Glen Rose, Travis Peak, and Torcer formations. It is this part of the Comanche section that is the object of the present extensive drilling campaign, in East Texas, northern Louisiana and southern Arkansas. In Arkansas, beds older than the Torcer rocks have been found in the Snow Hill field, north of Smackover. The age of these rocks are believed to be Permian, or perhaps older.

The relationship of these formations is shown in the following geologic section, none of the rocks of which outcrop in this general region but which have been found in the drilling of deep tests through the area:

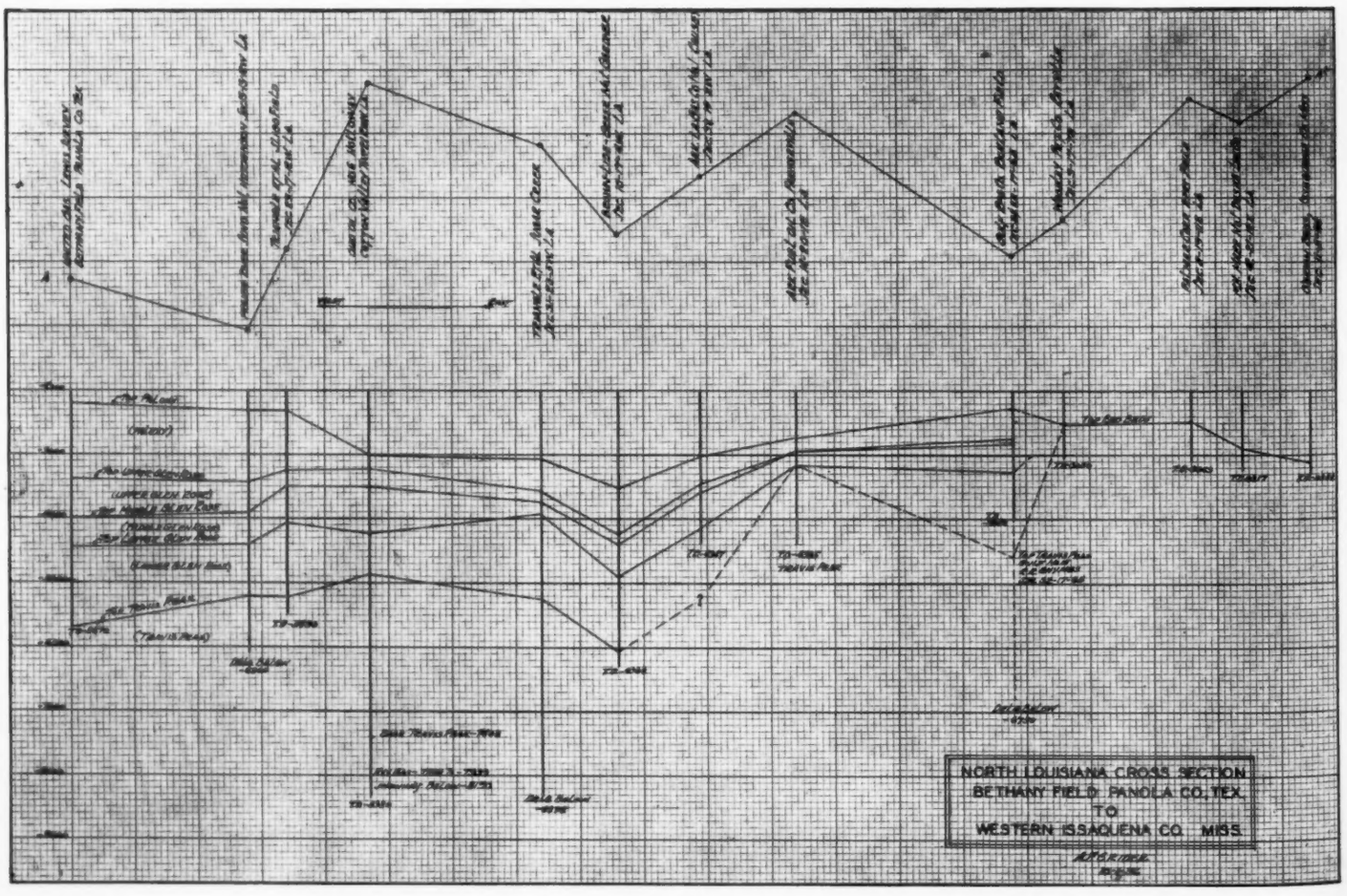
COMANCHE

Paluxy
Upper Glen Rose
Middle Glen Rose
Lower Glen Rose
Travis Peak
Torcer formation
Permian

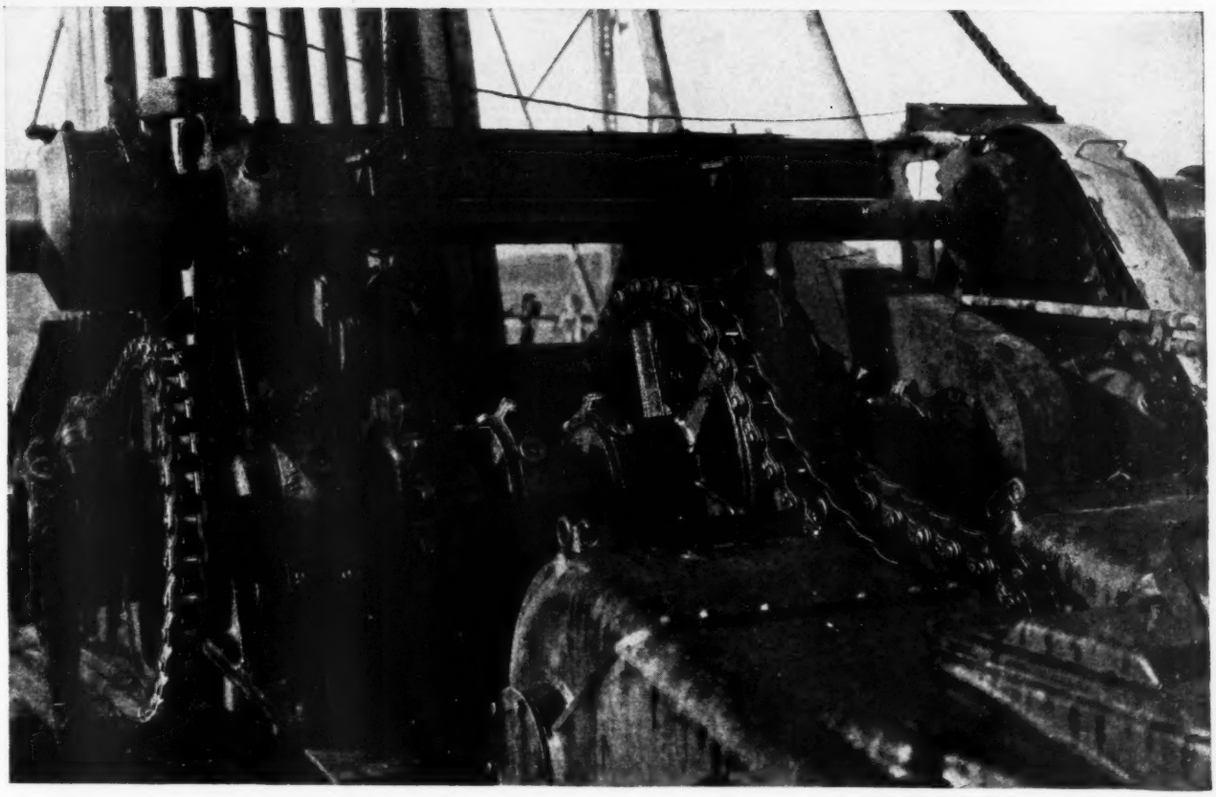
PERMIAN

The lowest stratified formation which has, up to the present time, produced oil and gas in commercial quantities in southern Arkansas or Louisiana has been referred to as the Permian. Later investigation may prove that the age of these red beds, anhydrite and gray limestones are Jurassic

(Continued on Page 88)



They Like LINK-BELT CHAIN



At Rodessa

ABOVE: A new heavy-duty rig equipped 100% with Link-Belt rotary chain, a common sight on rigs drilling Rodessa wells.

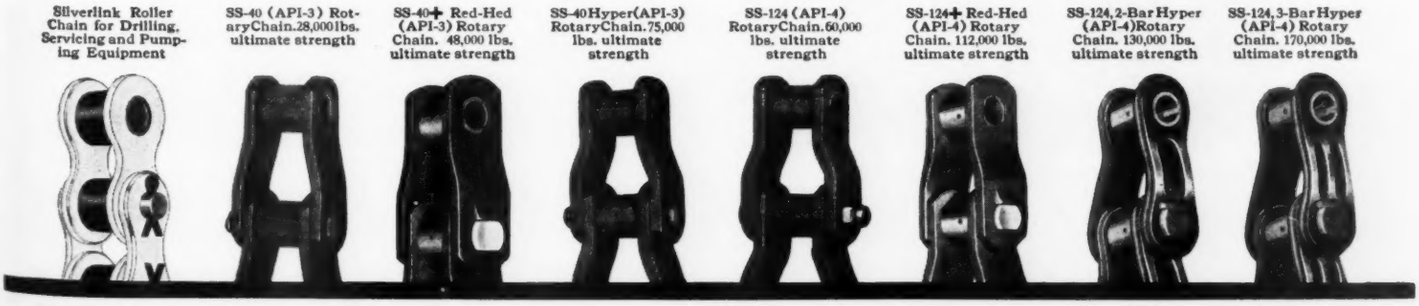
A Survey of This Busy Field Shows That of the Rigs Operating a Majority Are Using Link-Belt Chains.

● Preference for Link-Belt rotary chains is readily evident in the Rodessa Field, one of the industry's most recent "hot spots" of drilling activity. A check shows a majority of Rodessa rigs are equipped with Link-Belt chains. The illustration, typical of a Rodessa drilling scene, shows a 100% Link-Belt equipped rig.

The contractor, like hundreds of others, knows he can depend on Link-Belt chain; knows there's a type to fit his drilling problem, depth or formation notwithstanding. Operators in this zone of gas-impregnated sands know drilling here is a ticklish proposition. They're taking every precaution, including the selection of good equipment. More than 50% of them are using Link-Belt chain.

Address Link-Belt Company, Indianapolis, Philadelphia, Los Angeles, New York, Houston, Dallas or Oklahoma City (W. H. Abele, Box 305, Route 4).

5824


Silverlink Roller Chain for Drilling, Servicing and Pumping Equipment
SS-40 (API-3) Rotary Chain. 28,000 lbs. ultimate strength
SS-40+ Red-Hed (API-3) Rotary Chain. 48,000 lbs. ultimate strength
SS-40 Hyper (API-3) Rotary Chain. 75,000 lbs. ultimate strength
SS-124 (API-4) Rotary Chain. 60,000 lbs. ultimate strength
SS-124+ Red-Hed (API-4) Rotary Chain. 112,000 lbs. ultimate strength
SS-124, 2-Bar Hyper (API-4) Rotary Chain. 130,000 lbs. ultimate strength
SS-124, 3-Bar Hyper (API-4) Rotary Chain. 170,000 lbs. ultimate strength

YOU ASKED FOR IT - Eastman MADE IT!

The Instrument

The small diameter of the Inside Single Shot Instrument permits use of a protective barrel small enough to pass freely through tool joints.

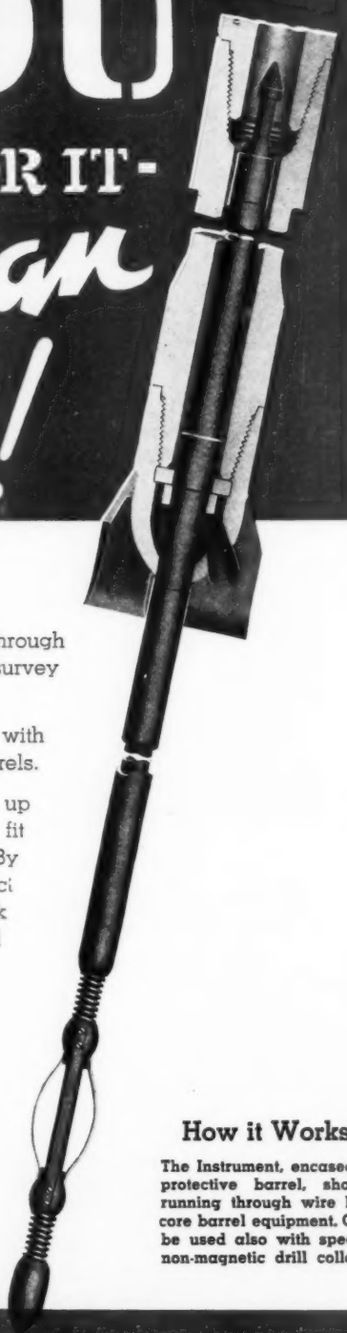
Now you can run this Inside Single Shot through your drill pipe and obtain a directional survey without coming out of the hole.

Used either with non-magnetic drill collar or with popular types of retractable wire line core barrels.

Remove core head from core barrel and make up non-magnetic survey barrel. Adaptor subs to fit all retractable core head types are available. By using existing core barrel assembly, a perfect alignment in drill collar is insured. Special shock absorbing plug guides the barrel through tool joints without destructive shocks.

The Result

Photographic Record, actual size, obtained from Survey, showing hole to be off 11¼ degrees, N-23 degrees W.



How it Works

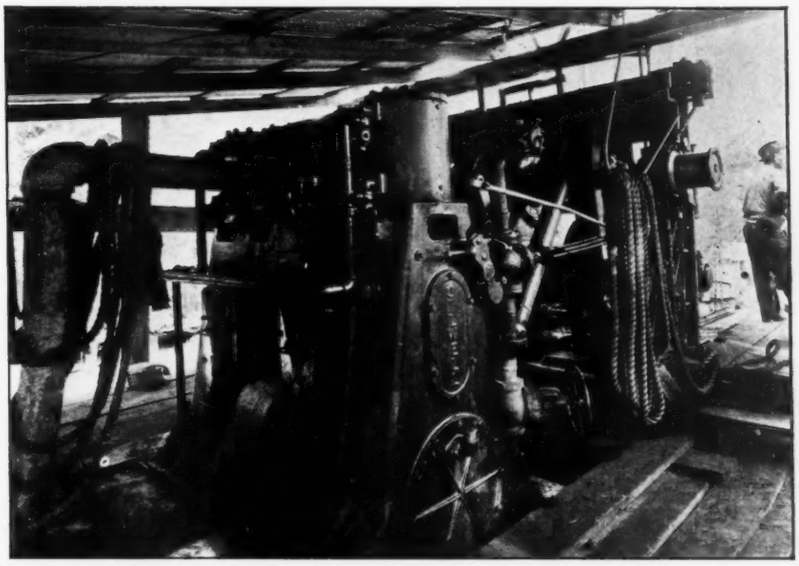
The Instrument, encased in protective barrel, shown running through wire line core barrel equipment. Can be used also with special non-magnetic drill collar.

Eastman OIL WELL SURVEY CO.

General Offices: DALLAS, TEXAS

LONG BEACH HOUSTON OKLAHOMA CITY

Rodessa Drilling Practice



Drilling rig having 12 by 12 vertical two-cylinder steam engine, with drawworks having two shafts, three posts, dual engine drive, six speed, chain driven, hydromatic brake, and unitized. Has handled maximum loads of 575,000 pounds

Although the Rodessa field has presented no outstanding drilling problems other than those found in deep hard-drilling fields, the remarkable manner in which drilling costs have been reduced and drilling time cut to less than one-half the time originally required, largely due to the employment of heavier and recently improved equipment, coupled with added experience, has marked it as a field of progress.

Many forces have combined to make Rodessa a recognized proving ground for all new heavy duty steam drilling equipment. First, the fact that it is now the most active deep drilling field in the world gives ample opportunity for the application of new equipment and methods. Second, the early recognition that only the best, heaviest and most modern equipment was sufficient to cope with the hard drilling encountered, led operators to look to all newest developments in order to improve efficiency and reduce drilling time. Third, the expensive drilling through hard formations made it imperative that costs be kept to a minimum. A representative figure for the overall drilling and completing cost of a 6,000-foot Rodessa well is $60,000, which is about twice the amount required to drill the same depth hole in other areas, such as certain fields on the Gulf Coast. Operators have, therefore, been forced to employ only the most economical methods of development, and the overall economy of utilizing only new, heavy, and efficient equipment has become well established in Rodessa drilling. Thus, it is today an outstanding show-place for the very latest in steam drilling equipment and practices.

Drilling time has been cut from the early figure of 60 to 70 days per well to the record of 25½ days, and the average of 30 to 40 days. Rigging up time has also been reduced from 7 or 8 days to 3½ to 4 days, largely due to the wide use of unitized equipment.

One year ago all drilling was done with the 122-foot, 333,000-pound capacity derricks. Today the 136-foot, 800,000-pound capacity derricks are prominent. A great deal of the additional strength is regarded only necessary as a factor of safety, but the assurance of this additional strength has added to the confidence and rapidity of drilling. Some few cellars were dug early in the life of the field, but today substructures are universally used.

The formations drilled in this area vary from the softest of loose sandstones to very hard and difficult strata. The services of field geologists cannot be ignored in considering the various factors which have contributed to improved technique in Rodessa drilling. Experience gained through the drilling of many wells now enables drillers to cope with each formation as it occurs, and in the most efficient manner. Set rules are now established for the proper weights and speeds to employ through certain heretofore troublesome formations.

Difficulty was at first experienced in the setting of surface casing, due to the very sandy nature of the first 200 to 300 feet penetrated. Correct conditioning of original drilling fluid to provide proper gel strength soon corrected this, and what was originally a difficult problem is now routine procedure.

WASHOUTS RARE NOW

Washouts in drill pipe were quite common at one time, and although they have not been entirely eliminated, their occurrence is now rare. Improved type, specially protected, tool joints have found wide application here in eliminating this early trouble.

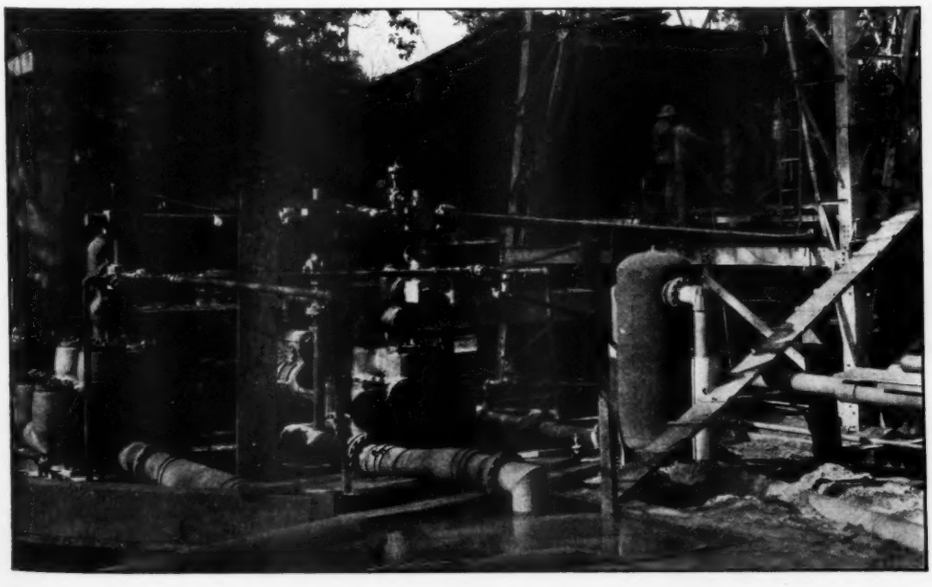
Drill pipe twistoffs below 5,000 feet offered probably the greatest source of trouble in early drilling, but experience quickly solved this difficulty and it is now met with routine success. Correct conditioning of drilling fluid, assisted by the use of mud screens in knocking out harmful cuttings, has done much to meet this trouble. Native mud has been satisfactory from the point of surface casing seat to the anhydrite section, first occurring at about 5,000 feet, but the effectiveness of the calcium salts in this formation is detrimental to maintaining the proper physical properties of the drilling mud. All operators are now advised to recondition their mud a short distance above the expected depth of the first anhydrite stringer. A 10-pound per gallon mud, with a viscosity of about 24 centipoise has been found most applicable for this section of drilling.

Life of a string of drill pipe has been increased from an average of four wells to as high as six to eight. Weight indicators are seen on all derrick floors now, and as the drillers became familiar with the occurrence of the different formations penetrated, and the proper speeds and weights to use in each instance, drill pipe life was materially extended. The increased use of improved type, specially protected, tool joints must receive their share of the credit for increased drill pipe life.

Originally it was necessary to drill a larger hole than ordinarily necessary to land 7-inch pipe on bottom, due to the sticking effect present in the producing formations, especially the Oolitic lime section below the anhydrite. Some operators are now reducing their drilling time by drilling the smaller hole to total depth and then underreaming through that portion of the sand which presented the possibility of sticking casing. By proper mud conditioning, this underreaming is done through the high-pressure producing formations, and no case of blowout has been reported.

Perhaps if one reason were to be ascribed for the reduction in overall cost and drilling time at Rodessa, it should be the improvement made in

(Continued on Page 96)



Slush pump hook-up on new type of rig at Rodessa, showing small 10 by 10 by 6 conditioning pit in foreground

COPYRIGHT OF GEOGRAPHY THE UNIVERSITY OF NEBRASKA

Buda JK-6 engine . . . equipped with a No. X7243 Twin Disc Power Take-Off Unit . . . driving a 10 x 10½ and 4½ x 12 Gardner Denver Well Compressor. Well depth, 3800 ft.; tubing size, 2½ in.; discharge pressure, 500 lbs.; intake pressure, 10 lbs.; gas circulation, per day, 450,000 cu. ft.; oil production, 250 bbls.

WHY Buda Standardizes ON THE TWIN DISC CLUTCH

Back of the Buda engine on this job . . . at the vital point where the load is connected . . . there's a Twin Disc Power Take-Off, dependably transmitting and controlling the engine's power.

Why is that power take-off a Twin Disc? Buda engineers answer—"While the use of the Twin Disc Clutch *did* enable us to simplify the design and construction of this unit, as well as others . . . the Buda Company has *standardized* on Twin Disc Clutches *primarily* because of the reputation of this clutch."

The operator who is responsible for the rig, and the builder of the rig, have the same confidence in the dependability of Twin Disc Clutches. Their faith is founded upon the reputation of Twin Disc . . . a reputation that is the result of performance. It has taken years of specialized experience and painstaking research to earn that reputation. The makers of Twin Disc Clutches intend to keep it.

Write today for specific recommendations. Engineering data on request.

TWIN DISC CLUTCH COMPANY

1328 RACINE STREET — RACINE, WISCONSIN

SALES AND SERVICE OFFICE

310 EAST 4TH STREET — TULSA, OKLAHOMA

TWIN DISC CLUTCHES

Intensive Seismic Exploration in North Louisiana District

By JOSIAH TAYLOR
Consulting Geophysicist, Shreveport, La.

Although a few seismic surveys were conducted in North Louisiana before the discovery of oil at Rodessa, the present period of intensive seismic exploration in northern Louisiana and southern Arkansas was initiated by the occurrence of oil there in the Lower Glen Rose formation of the Trinity group. The interest in older and deeper beds which this discovery aroused could only be satisfied in this region by geophysical exploration because of the paucity of deep subsurface data available in North Louisiana.

The area had been extensively drilled and wild-

Seismograph recording truck

catted but only to shallow depths in most cases. Interest had formerly centered mainly in the Nacatoch and in the Georgetown lime, or its equivalent, consequently relatively few wells had been carried below 3,000 feet. Therefore, the geologists and producers solicited the cooperation of the exploration companies, and soon the area was swarming with geophysical crews. The peak was reached in July of 1936 when there were 40 odd crews operating in northern Louisiana and southern Arkansas. The number was greatly reduced in August due to the fact that several seismograph "highs" proved out structurally high but productive of gas instead of oil. The formational sands were at fault rather than the seismic mapping of structure. To many it appeared as if the deeper sands of the area would produce only gas—with the exception, of course, of Rodessa.

Crews departed, some to Wyoming, some to the Rio Grande. A number remained, however, financed by those who were patiently mapping township after township, or in some cases by operators with strong hunches or great faith in some particular area. In the latter part of August the Ohio Oil Co. brought in its Cotton Valley deep well discovery, producing from an upper sand member of the Travis Peak. Interest in the deep beds of North Louisiana was revived to an even greater extent, as evidenced by the number of deep tests planned, and the return of seismic crews to the area to rejoin the search with those who had never left, until now there are over 20 crews in the Louisiana-Arkansas territory. The engineering and drilling equipment varied but little. Whereas some parties are able to work effectively with one drill truck running one to two tours, others have the added luxury of an extra drill. Many use plane table and alidale, mapping as they go, although some use transit and stadia. The instruments vary from the conventional 6-phone, and 6-trace arrangements and multiple-phone systems to special jobs mounted in beautifully special-built trucks which spewed out 30 odd phones for a set-up. In spite of the arguments against filtering which are so frequently advanced, most instruments utilized some type of filtering (in its broadest sense), whether recognized or admitted by its makers or not. Usually the filtering is restricted to the use of the type of low frequency cut-off, sometimes augmented by a "wind filter," that is, one having a high frequency cut-off. The low frequency cut-off filter is not particularly needed with the multiple geophone arrangement, which increases the ratio of reflected energy to "ground-roll" without the use of electrical filters. The multiple geophone

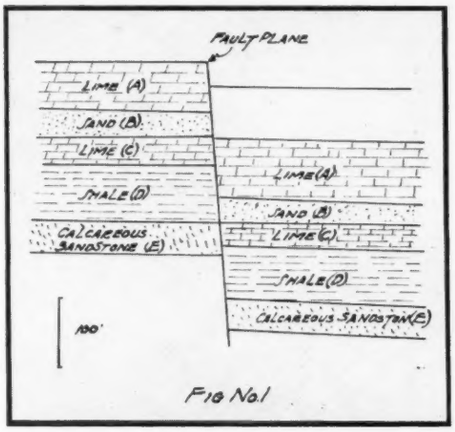


FIG No 1

arrangement discriminates against energy arriving in a certain direction rather than against any particular group of frequencies as does an electrical filter.

Various spreads have been successfully used in North Louisiana and southern Arkansas. The multiple phones often are placed at a distance of about 2,000 feet from the shot point with, of course, very close spacing of seismometers. The conventional 6-phone array is usually 900 to 1,300 feet from the shot point, using 100-foot spacing between phones, and sometimes 50 feet. "Verticals" are practical in some areas, and are occasionally resorted to. One crew seems to be having a good deal of success with long spreads for most of its prospects. Of course, both long and short spreads are used at times by most parties when necessary to avoid particularly bad ground-roll, and at the same time record both shallow and deep "events." This resume does not pretend to give a detailed account of what each crew uses and why, because different situations and instru-

Torsion balance exploration

ments require different tactics. The preceding is but a general review of present tactics in this area.

The conditions for obtaining good reflections in this region vary widely, from the best to the worst. For the most part, very good reflections are obtainable from the Caddo gas rock (Nacatoch), the Georgetown lime, or its equivalent, and the anhydrite, where it exists. Certain strata in the Red Beds also give very pretty reflections, although of little value. Some of the prettiest reflections the writer has seen in years of reflection shooting were recorded in North Louisiana—and also the worst. The three chief difficulties seem to be: (1) Outcrops of the thick Sparta sand and terrace deposits too thick to be drilled through economically render some areas practically unworkable—although most consultants will not admit that there is any area in which they cannot get good results—until they try it. There is also some question as to whether good records can be obtained even when the charge is planted below the sand. Usually this practice helps a great deal, but not always. When it does not, the next step usually suggested by the uninitiated is to drill a deep hole for each of the seismometers and bury them beneath the sand body. This is not only prohibitively expensive, but also is inadequate because it seems to work only about once out of five times.

The two other principal difficulties in obtaining good reflections in this territory arise from the subsurface itself. First, the presence of faults in some regions, coupled with the

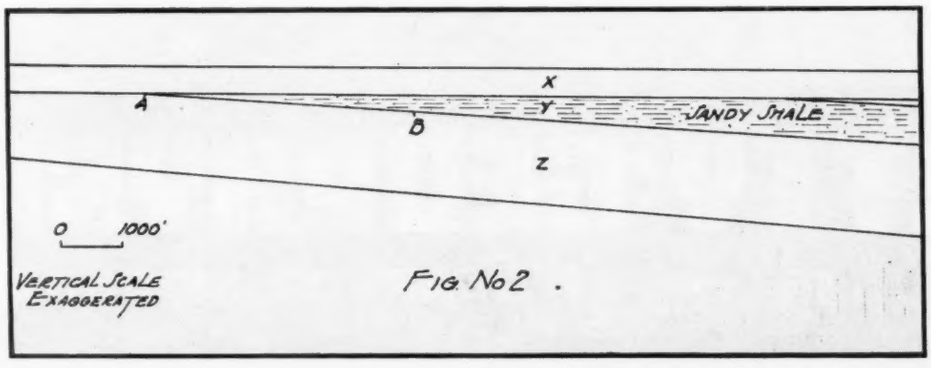
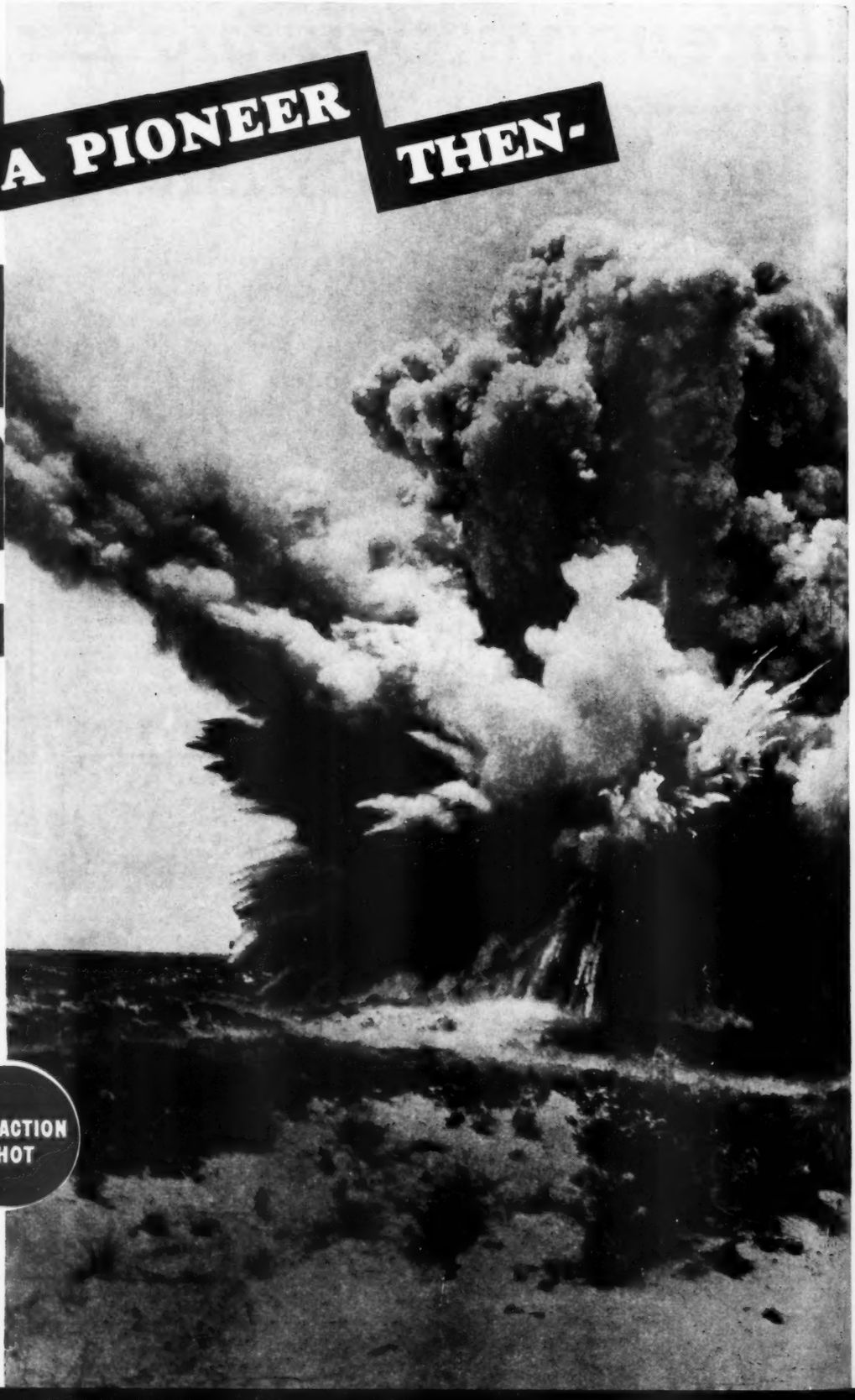


FIG No 2 .

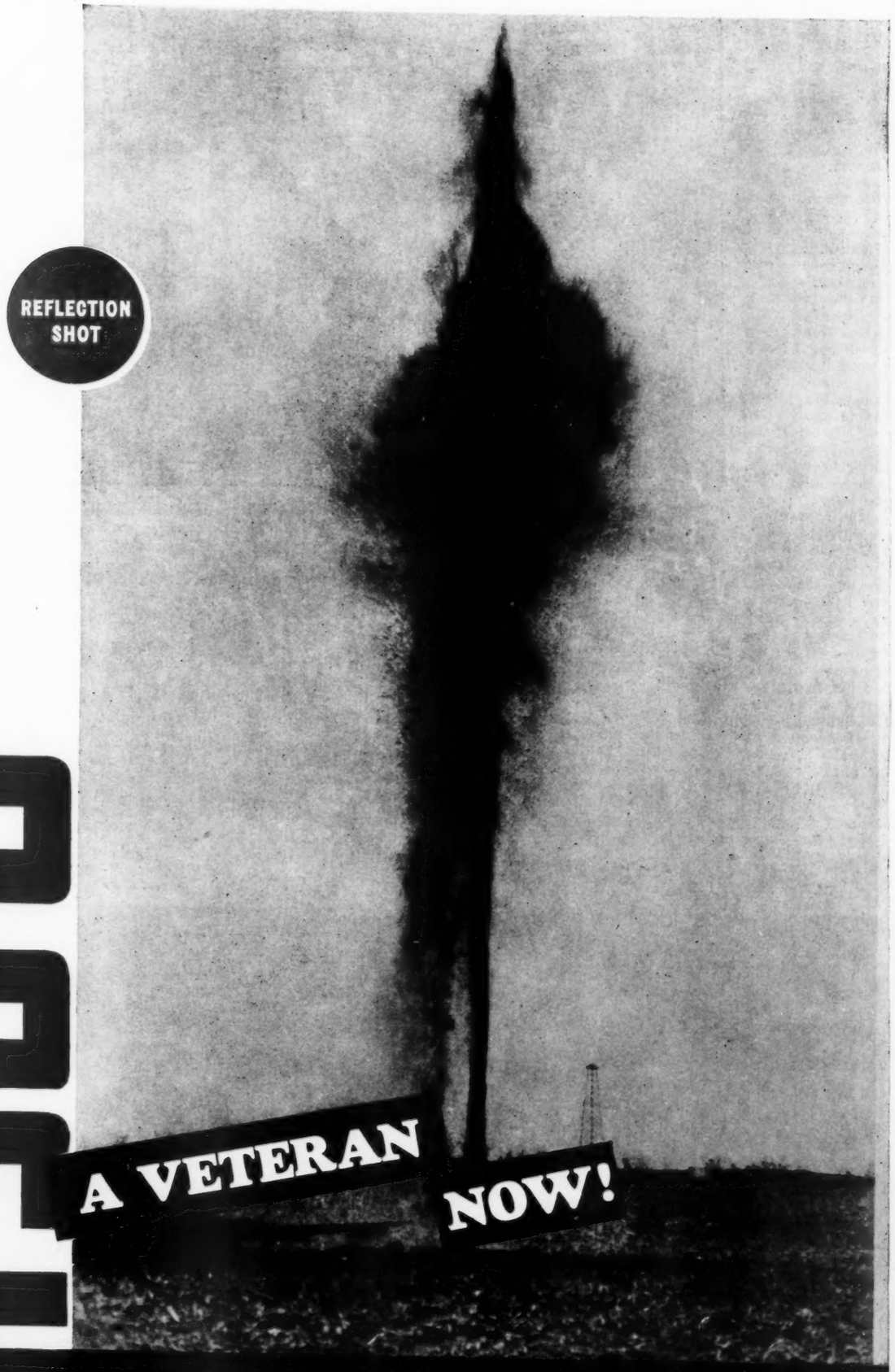
1925 A PIONEER THEN-



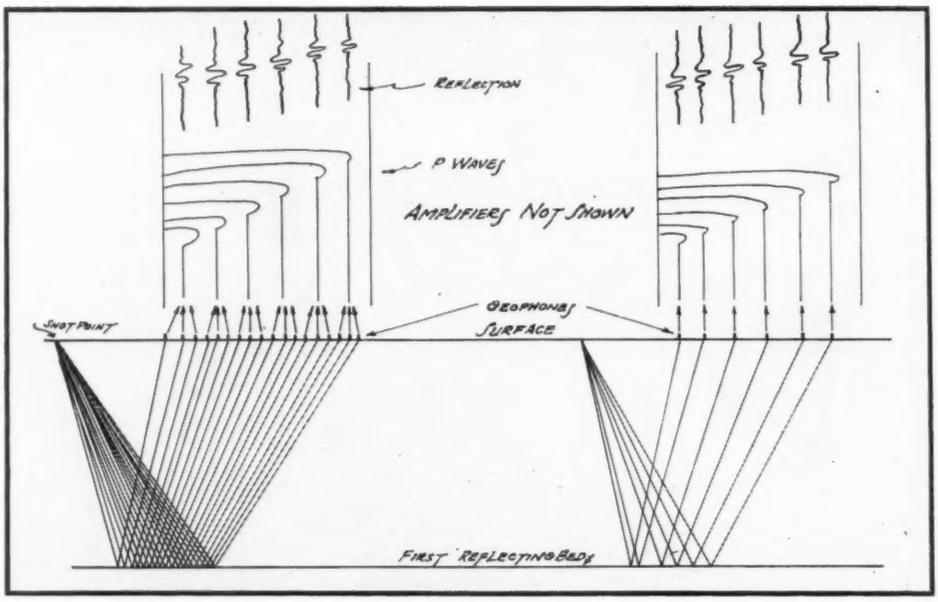
PETTY GEOPHYSICAL

SAN ANTONIO

11 YEARS SEISMOGRAPH WORK


REFLECTION SHOT
1936
A VETERAN NOW!
ENGINEERING CO.
WITH NO DISSATISFIED CLIENTS

generally unconsolidated condition of the beds (that is, the interfingering of soft and hard strata) make the possibility of unknowingly jumping from one bed to another a source of concern to even the most experienced interpreter. An example of this is shown in Figure 1 where thin alternating beds of soft and hard material are faulted. The top surfaces of the two good reflecting beds C and A are brought to the same level by faulting. If the reflections from one of these beds were particularly good it might be carried across the fault, any diminution of energy being attributed to any one of half a dozen other causes than the one of picking up an entirely different stratum. In the same figure is shown the case of two beds of different stratigraphy (C and E), but similar characteristics, brought into juxtaposition by faulting, thereby giving rise to the same chance of error. In this instance the error could persist even though the time interval checked if the interval were taken as that between beds C and E to the left of fault plane.



Schematic drawing showing the relation of a simple multiple phone arrangement and corresponding record

Schematic drawing showing relation between geophones of combined sixphone-sixtrace arrangement

The second source of difficulty with the subsurface lies in the numerous occurrences of unconformity in this area. This condition also presents the possibility of skipping from one bed to another. If the unconformity occurs with a thinning of one bed to a feather edge (as shown in Figure 2) the difficulty will be encountered not at the very edge A of the bed Y, but perhaps a mile or more down dip, say at B, where the bed has thinned just enough to have a thickness of less than the wave length of the reflected energy. Here it has been assumed that the reflections occur from the bottom of the well consolidated bed X and the top of a similar bed Z. From B to A difficulty may be found in resolving the two beds, because of interference between the two reflected "events," and because of slight local variations in contact between beds X and Y and between beds Y and Z make first one reflecting surface and then the other the dominant one (local variations in the X-Y interface would very likely be of frequent occurance). A reflection from the top of X would persist in coming in to the left of A, whereas the other two disappear entirely. There is some chance of mistaking this for a fault, but, of course, this will not happen if sufficient care is observed.

These subsurface conditions, if recognized, may of course lead to the discovery of fault-closed structures, and even to "shore line" fields, if the pinched-out beds happened to be of porous sand or limestone. It is not so simple to diagnose, however, as might appear on paper. In practice there are what seem at present insurmountable difficulties in the discovery of this latter type of oil reservoir by geophysical surveys such as are now undertaken. However, the future may see a scarcity of structures, and a mounting price for oil, which will justify the use of more intensive shooting for these shore line fields. With more careful work both in point of depth determinations per acre, the careful interpretation by experienced men, the problem of finding such reservoirs will be solved, assisted, of course, with the cooperation of the drill and core barrel for porosity determinations. It is a problem which can hardly be solved in areas totally without previous drilling, nor would such a search be undertaken in virgin wildcat territory.

Texarkana Gas Suit

TEXARKANA, Tex., Oct. 12.—The city of Texarkana has filed an answer to the suit brought against it by the Arkansas-Louisiana Gas Co. which sought to enjoin the city from continuing with the construction or operation of a municipally owned gas-distributing system. A pipe line to the Rodessa field had been planned.

Business center of Shreveport, La., seen from the air

Watch for CASING COSTS out there!

NOT this year or next, perhaps — but after that your casing costs may loom up big. Extra expense in these later years may more than wipe out the savings made by putting down cheaper material.

You can avoid these hazards by using NATIONAL Seamless. Experienced operators know how it withstands the tough strains and shocks that are frequently encountered in running and cementing, and remains sound and strong after years have passed. These men have learned that it stabs easily, screws together smoothly and accurately. They know it will not split at a weld a mile or more down—*it has no welds.*

You, too, should depend on NATIONAL Seamless A. P. I. Diamond BX and B8 Casing for soundness, durability and uniformity. Get the habit and specify NATIONAL Seamless for your wells.

NATIONAL TUBE COMPANY

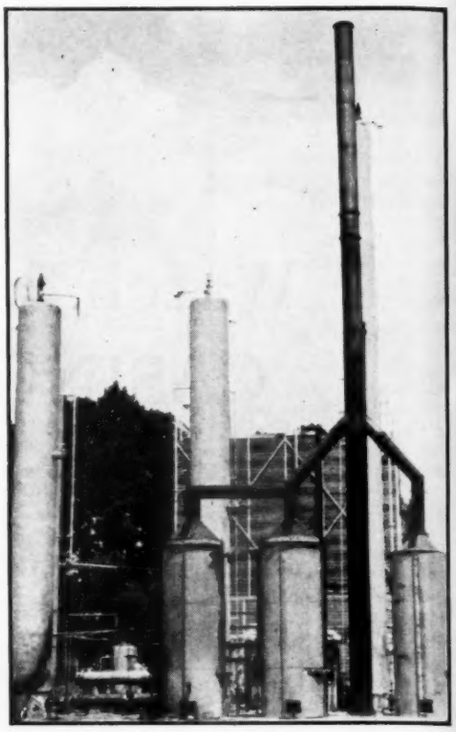
PITTSBURGH, PA.

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

Increase in Runs Follows Opening of Rodessa Field

By D. H. STORMONT



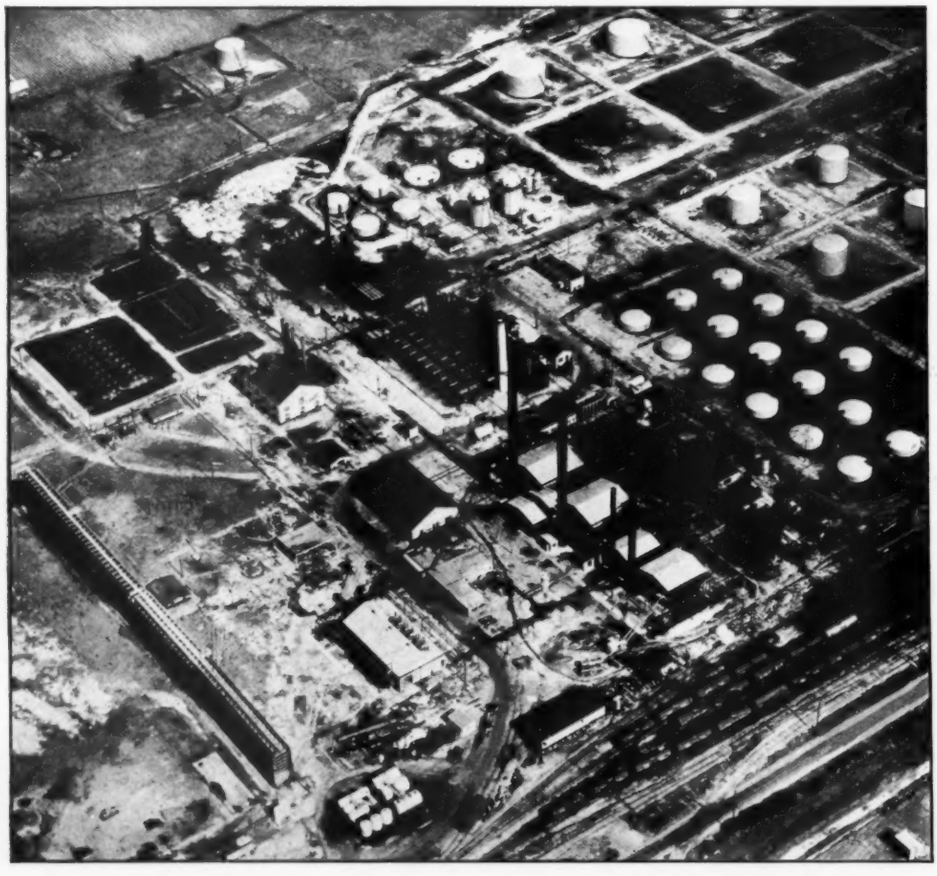
Reboilers and fractionating towers in Eastern Texas Production Co. blending plant. Distillate is distilled and blended with natural gasoline to produce a finished motor fuel

The finding of deeper production in the Rodessa field in 1935 served to cause a revival of refining activities in that area. For several years North Louisiana had been becoming less and less important as a refining center due to lack of crude supplies; crude runs to stills in July, 1935, being only 23,000 bbls. daily compared with 34,000 bbls. in 1931. The completion of United Gas Public Service Co. No. 1 Young at a depth of 6,048 feet for a 5,500-bbl. producer acted to end this downward trend and after the field became of commercial importance crude runs to stills in North Louisiana refineries began to increase.

In July, 1935, there were 9 refineries located in this area and of these one was closed down. The 8 operating refineries had a total daily refining capacity of approximately 50,000 bbls., but crude runs to stills were averaging only about half of this total capacity. Now, after the field has been producing for over a year, there are 12 refineries in this district with a total refining capacity of 93,950 bbls. daily, only one plant is closed down, and crude runs for the present month are estimated to average about 46,000 bbls. daily. Thus it may be seen that while the discovery of the Rodessa field caused but little new plant construction, the new production has caused some shutdown refineries to resume activities and an increase in capacity of some of the other plants. The accompanying table shows the refineries now operating in North Louisiana.

The lack of new plant construction in this area is undoubtedly due to the low octane number of the straightrun gasoline produced and the low gasoline content of the crude. To produce a motor fuel of suitable octane number would require the installation of expensive cracking and reforming equipment. This fact alone tends to discourage the building of skimming plants and as a result much of the Rodessa crude is piped to outside refineries. The discovery of the nearby Talco field will not materially alter this situation since this crude also has a low gasoline content and produces a straightrun gasoline of low octane number.

The production of distillate plays an important part in the manufacture of motor fuel in this field, there being two plants specifically designed to process the distillate to finished motor fuel. These two plants are the North Caddo Refining Co. and the Eastern Texas Producing Co. The distillate, which has a gravity of approximately 64.5 and contains about 85 per cent of 400 endpoint gasoline, is distilled, blended with natural gasoline and stabilized to produce a finished motor fuel.



Atlas Oil Corp. refinery, Shreveport, La., including new vapor phase cracking units, treating and re-run plant, vapor recovery, gas stabilization, and polymerization plant

REFINERIES OPERATING IN NORTH LOUISIANA

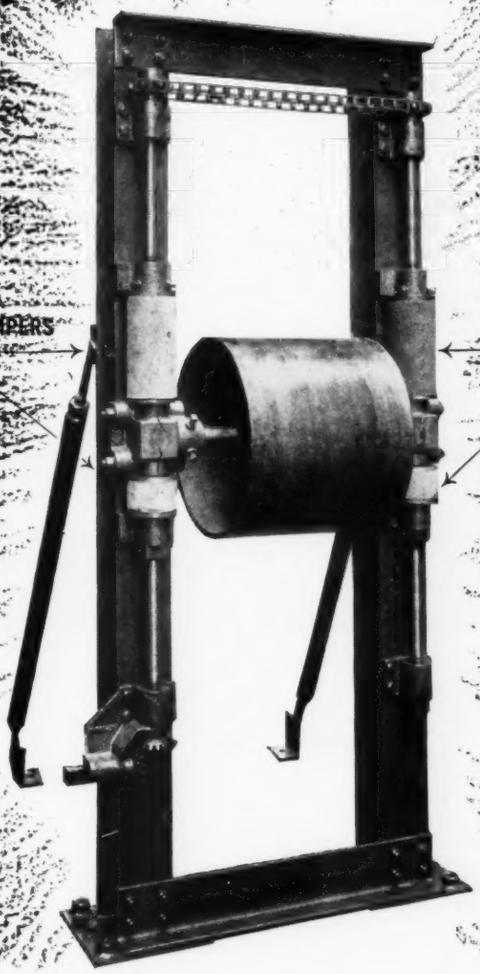
Company and location—	Daily crude capacity	Est. dly. runs for October
Acme Refining Co., Monroe	100	50
Atlas Pipe Line Corp., Shreveport	12,500	10,000
Bayou State Oil Corp., Hosston	750	350
Griswold Refineries, Sandra	1,000	750
Griswold Refineries, Shreveport	5,000	1,500
Ida Oil & Refining Co., Rodessa*	....	....
Louisiana Oil Refining Co., Bossier City	25,000	20,000
North Caddo Refining Co., Rodessa	1,000	500
Pelican Refining Co., Converse	100	50
Rodessa Oil & Refining Co., Cedar Grove	7,000	3,700
Shoreline Oil Co., Lewis	5,000	4,300
Stanolind Oil & Gas Co., Superior	5,000	5,000
Texas Co., Shreveport	1,000	(†)
Total	69,950	46,200

*Construction planned. †Shut down.

HAPPY SHORT-CENTER ENDLESS BELT DRIVE

THE ULTIMATE IN POWER TRANSMISSION

HAPPY MULTI-FLEX CORD



SIXTEEN YEARS OF LEADERSHIP

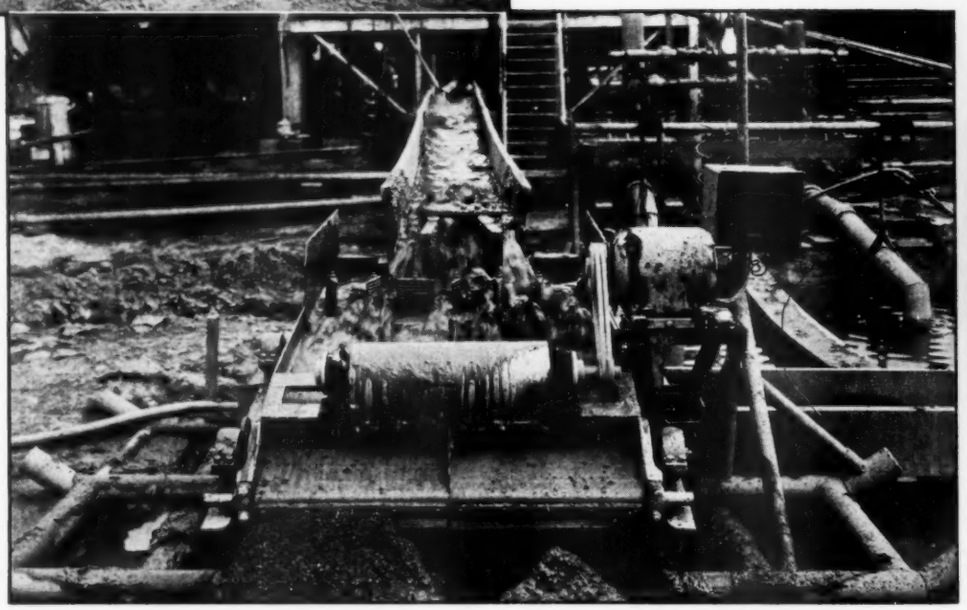
HAPPY BELTING CO. TULSA-OKLA

Happy BELTING COMPANY

310 EAST TENTH STREET, Tulsa, Oklahoma

All Happy Belts are manufactured by the Boston Woven Hose and Rubber Company.

North Louisiana Mud Problems Found in Deeper Well Drilling



By J. W. O'BRIEN
Baroid Sales Co.

It is rather early to attempt an outline of specific mud problems which will develop in the deeper drilling of the North Louisiana area. From the experience that has been obtained drilling the Rodessa area and the information obtained in the drilling of several wells to deeper levels in this general area it might be well to outline the mud problems so far encountered and attempt to define a safe mud control procedure.

In the drilling of wells in the Rodessa field proper a number of operators have experienced stuck drill pipe while spudding in at surface. This has been due to location being on a sand formation rather than a surface clay. In these cases as a precaution against the loss of time a number of the operators have adopted the schedule of using several tons of bentonitic clay for spudding-in mud.

After surface pipe has been set the formation to the top of the anhydrite (approximately 5,000 feet) stands up very well. Due to their compact state, these shale beds in this upper zone do not develop any appreciable amount of colloidal matter. It is felt that where an operator furnishes his well at surface with several tons of bentonitic clay it will be sufficient to properly seal the formation to the anhydrite formation.

In this regard, the fact that the shale beds are well consolidated and will stand up even with a lack of colloidal matter in the circulated mud, it does not necessarily mean that the operator is taking all the precaution he may to properly maintain an open hole. The diameter of a drilled hole is that of the diameter of the bit being used less twice the thickness of the filter cake laid down on the face of the hole. When a fluid is used that is devoid of gel-forming colloidal particles, it requires a much thicker cake to reduce to the minimum filtration of the water from the mud fluid. When colloidal clay is incorporated in the fluid, a much thinner cake will reduce filtration to the minimum and the operator can expect to maintain a larger diameter of the hole. Then also this thinner cake does not permit as much water filtering from the mud fluid, into the shale beds and thus prevents weakening their characteristic firm structure with the possibility of sloughing.

For mud control from the surface to the top of the anhydrite it would therefore seem practical to recommend the hole be started at surface with a colloidal clay mud. This initial pit of colloidal clay mud will generally give ample walling characteristics to take care of the first 5,000 feet.

ANHYDRITE FORMATION

The anhydrite formation, a calcium salt, destroys 70 to 80 per cent of the effectiveness of what colloidal matter might be in the circulated fluid. It further creates an immediate tendency of the solids contained in the fluid to settle rapidly. If one continues to drill with a fluid of this description, which contains practically only inert matter and water, it leaves the operator solely dependent upon the formation standing up due to its firmness, even though no sealing factor is present. Then, too, thick walls are built on the face of the hole and a resulting tight hole can be expected. This condition of the mud fluid such as outlined has resulted in a number of cases of drill pipe becoming stuck and innumerable cases of casing failing to land on bottom without the help of pumping.

After a careful study of this action of the anhydrite, the problem was solved by the use of a specially treated clay which was found to remain in suspension in the anhydrite saturated mud. To further assist in the suspension of the solids, operators usually maintain their mud so that about 2 per cent by weight of the mud consists of colloidal clay.

Anticipating the destructive action of the anhydrite formation and building up the mud with this specially treated clay prior to encountering this formation, not nearly as much material was necessary to maintain the proper viscosity.

It is suggested the operator start treating his mud 100 feet above where he expects to encounter the anhydrite formation and very little change in the mud fluid will be noticeable when the anhydrite is encountered.

After the anhydrite is encountered and while drilling it, it will be noticed that the weight of the fluid will increase. If left alone without adding water the fluid will increase from a normal of 9.8 pounds to 10 pounds up to more than 11 pounds per gallon.

In view of the fact that at Rodessa no more weight than 10.3 pounds per gallon is necessary to have ample safety factor to control the lower formation pressures and realizing a mud containing a high percentage of non-colloidal matter (such as an anhydrite) tends to build a thick filter cake, this weight is maintained around 10.3 pounds per gallon by adding water. To offset this addition of water small additions of the clays will

" . . . tanks that make large capacity pressure storage practical and economical!.."

THE tank shown above is a 5,000 Bbl. Hortonsphere which has recently been placed in service in the Lubrite plant of the Socony-Vacuum Oil Co., at East St. Louis, Ill. It is designed to operate with an internal pressure of 20 pounds gauge and is used in handling 78°-84° gravity natural gasoline blending stock which comes in by tank car from Mid-Continent fields in quantities of 8,000 to 10,000 gallons at a time. Designed to "fit the job", this sphere has virtually eliminated the excessive evaporation losses often encountered in such a handling problem.

This is just one of the special types of Horton pressure storage tanks offered to the oil industry. From these several types it is now possible to select a design that is both practical and economical for the storage of virtually any volatile liquid or gas in any quantity at any desired location. For information and engineering data, write our nearest office.

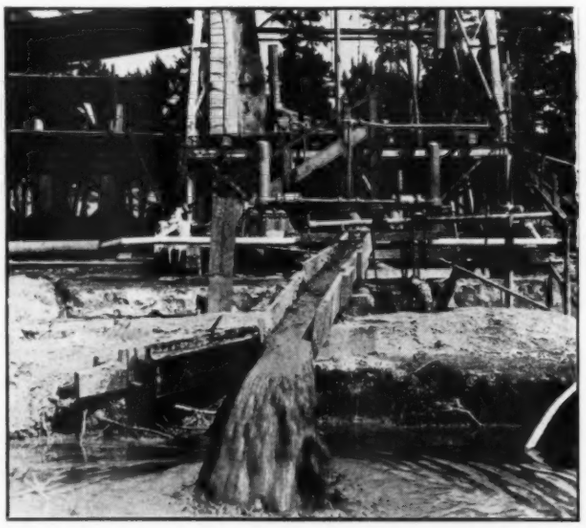
CHICAGO BRIDGE & IRON WORKS

Dallas	1241 Dallas Athletic Club Bldg.	Cleveland	2204 Rockefeller Building
Houston	2919 Main Street	New York	3147-165 Broadway Building
Tulsa	1606 Thompson Building	Philadelphia	1615-1700 Walnut St. Bldg.
Birmingham	1536 North Fiftieth Street	Boston	1517 Consolidated Gas Building
Chicago	2128 Old Colony Bldg.	San Francisco	1054 Rialto Building
Detroit	1514 Lafayette Building	Los Angeles	1423 Wm. Fox Building

Fabricating plants in Birmingham, Chicago and Greenville, Pa.

be necessary to maintain the viscosity and walling properties to the recommended level.

Using a 500 c.c. cup and a Marsh funnel viscosimeter and passing 500 c.c. of fluid only through the funnel (water will pass at 18½ seconds) it is suggested that a viscosity be maintained from 24 to 26 seconds. Maintaining this viscosity by using colloidal clay and suspending clay rather than depending upon the larger anhydrite and shale particles has been found very successful in completing wells through and below the anhydrite. This is accounted for due to the fact that below the anhydrite are several hundred feet of shale beds and below these beds and above the producing zone is a porous oolitic lime formation. This porous oolitic lime will require even a larger percentage of colloidal matter in the drilling fluid to give the proper walling characteristics than that required in the other formations of the hole. It was probably due to building a thick cake of large non-colloidal particles on this porous oolitic lime formation that caused a great deal of trouble before the above mud control was developed.



In connection with removal of the larger cuttings from the mud fluid a large number of the operators at Rodessa have now adopted mud screening by mechanical means and it is particularly valuable in connection with the removal from the fluid of the large anhydrite particles. In passing it can also be noted that cuttings taken from the face of these screens at stated intervals furnish the geological departments important information.

Mud control on the wells of North Louisiana that have been drilled to a deeper level than those wells at Rodessa and for those wells which will be drilled to deeper levels in the future practically the same procedure as outlined for Rodessa can be followed. From information so far obtained these lower formations will be well compacted and will develop a very small per cent of colloidal matter. It would therefore seem practical that the operator maintain a reasonable viscosity (24 seconds—500 c.c. in and out—Marsh funnel) by adding colloidal clay to his circulating fluid and thus assure himself of a thin impervious filter cake lining the walls of his well.

In some localities the operator can anticipate higher pressures than those found at Rodessa and will therefore find it necessary to carry higher weight of the mud in these cases than recommended for Rodessa. In these cases where a high weight mud is necessary it is often economical to control the viscosity by the use of a chemical mud thinner along with lesser amounts of water than would otherwise be required.

In conclusion the following control is suggested:

1. Use of a colloidal clay as a spudding-in mud.
2. Additions of a suspending clay and a colloidal clay to the circulating system prior to encountering the anhydrite formation and a careful control of viscosity.
3. Maintain a weight of the mud fluid sufficient to control any pressures encountered.
4. By mechanical screening and use of chemical mud thinners keep the mud clean of large non-colloidal cuttings.

North Louisiana Stratigraphy Being Worked Out Gradually

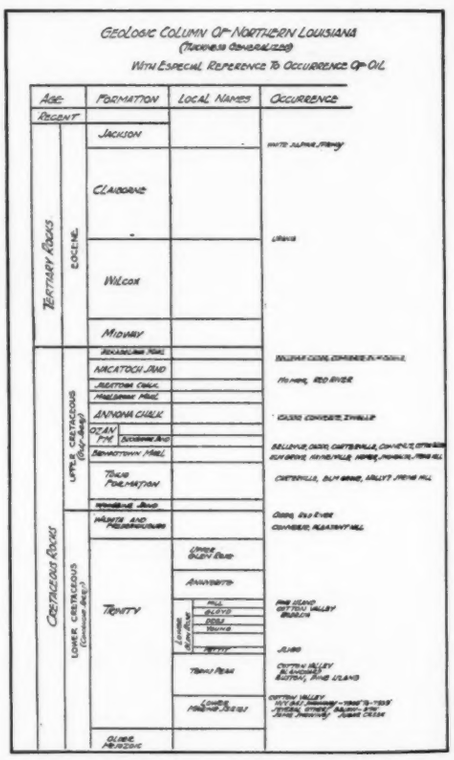
(Continued from Page 74)

and not Permian, but it is definitely known that they are older than Cretaceous.

The discovery of oil in the Snow Hill field, on the northern edge of the Smackover field, from a lime formation, at a depth of 4,909 feet, clearly established a new producing horizon for southern Arkansas and northern Louisiana. As a result of this new find, all of the Ouachita uplift in Arkansas and Louisiana, and many of the well-known structures such as Homer, Bellevue, Sligo, Pine Island, and other localities in southwestern Arkansas and northern Louisiana offer probabilities for new fields in the Permian.

TORCER FORMATION

In Texas W. S. Adkins has given the name Torcer to that section of Lower Cretaceous marine beds which underlie those of Travis Peak age. In

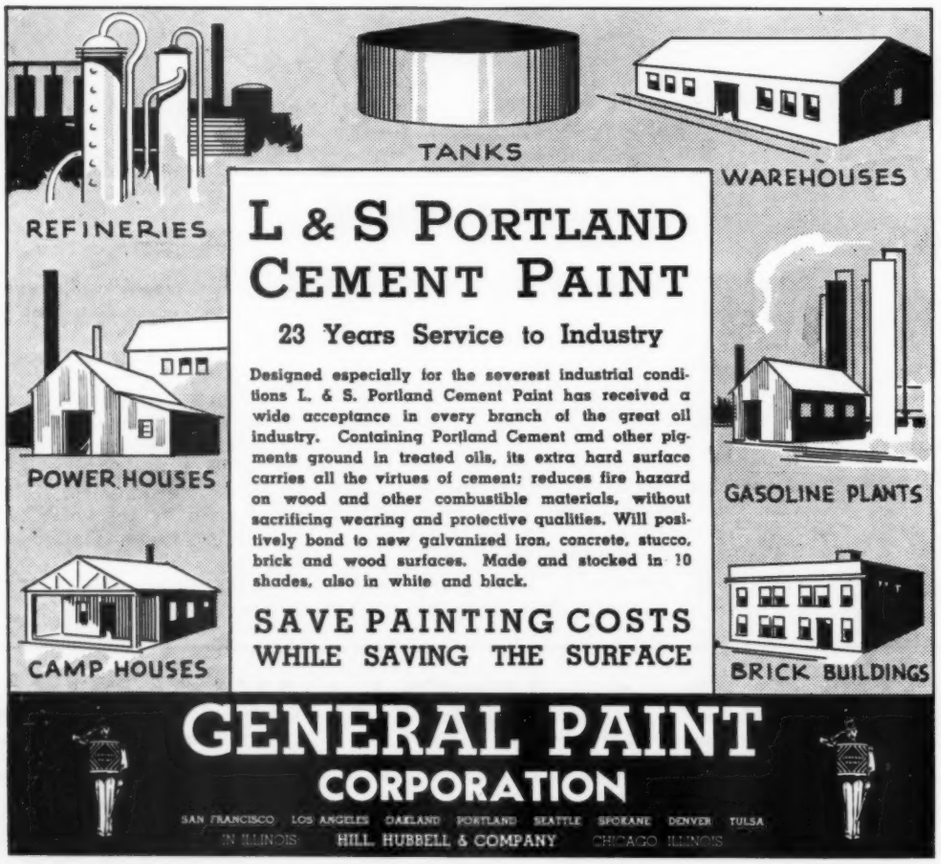


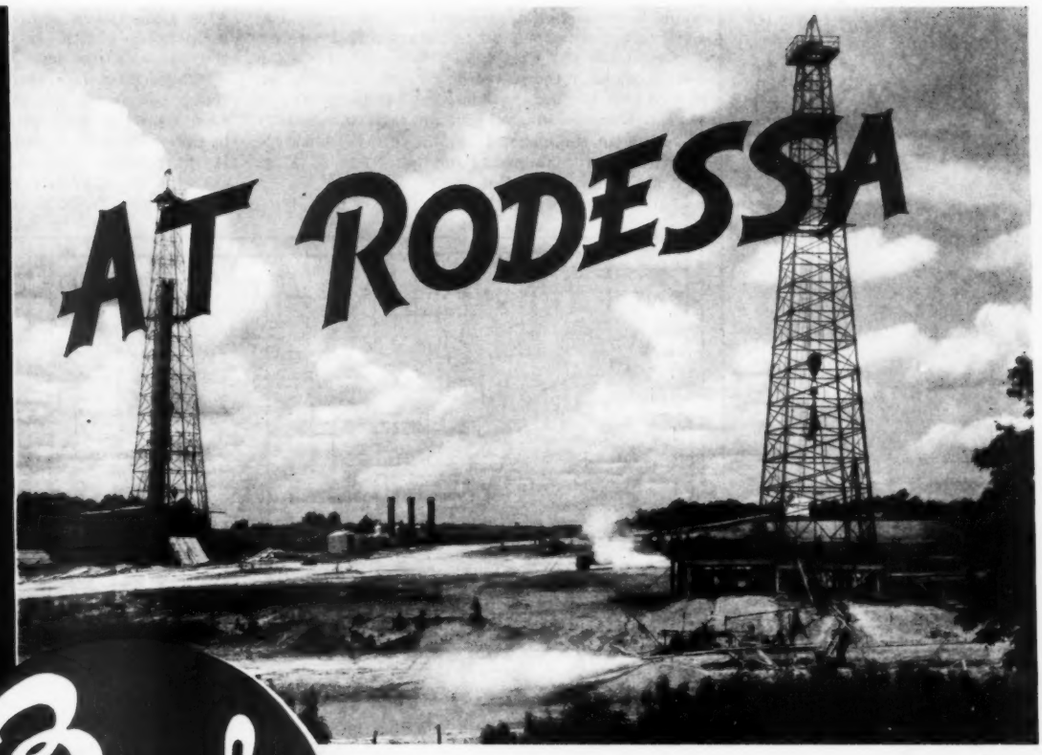
Mexico the oldest beds of the Lower Cretaceous are called Neocomian and this name has been used by Spooner in Arkansas reports.

Below the Travis Peak red beds of Louisiana 912 feet of marine lime and shale have been penetrated in the Ohio Oil Co. No. 6 Holloway at Cotton Valley. The prevailing color of these marine sediments is dark to black, with an interfingering of lighter shades.

This formation was first discovered in Louisiana in the Dixie Dillon No. 92, in the Pine Island field. Below the base of the Travis Peak red beds, at 5,919 feet, the drill entered a bed of black shale and lime with some sand, and continued to a depth

FOR PAINTING GALVANIZED IRON, WOOD AND MASONRY SURFACES


TANKS
WAREHOUSES
REFINERIES
L & S PORTLAND CEMENT PAINT
23 Years Service to Industry
Designed especially for the severest industrial conditions L. & S. Portland Cement Paint has received a wide acceptance in every branch of the great oil industry. Containing Portland Cement and other pigments ground in treated oils, its extra hard surface carries all the virtues of cement; reduces fire hazard on wood and other combustible materials, without sacrificing wearing and protective qualities. Will positively bond to new galvanized iron, concrete, stucco, brick and wood surfaces. Made and stocked in 10 shades, also in white and black.
SAVE PAINTING COSTS WHILE SAVING THE SURFACE
POWER HOUSES
GASOLINE PLANTS
CAMP HOUSES
BRICK BUILDINGS
GENERAL PAINT CORPORATION
SAN FRANCISCO LOS ANGELES OAKLAND PORTLAND SEATTLE SPOKANE DENVER TULSA
IN ILLINOIS HILL, HUBBELL & COMPANY CHICAGO ILLINOIS



3 out of 4 "

are "SCHLUMBERGER SURVEYED WELLS"

The Rodessa field offers an excellent example of the wide application of Schlumberger surveys. More than 75% of all wells drilled in this active field have been surveyed by Schlumberger. Both wildcats and wells in proven territory have taken advantage of this, the one proven method of obtaining reliable data on subsurface conditions.

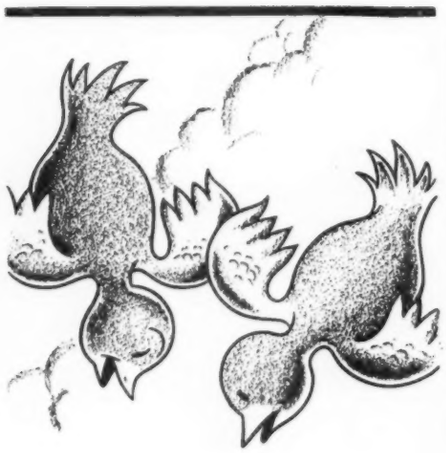
Operators everywhere are finding it far too costly in the long run to be without the services offered by Schlumberger. There's a crew near you, wherever you are.

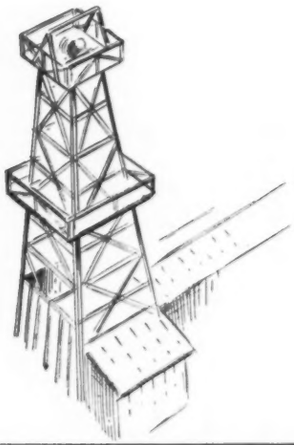
SCHLUMBERGER

WELL SURVEYING CORPORATION

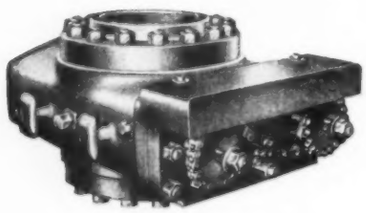
HOUSTON, TEXAS U.S.A.

"Electrical Well Logging"





IT'S TOO RISKY LANDING ON THAT ONE — IT DOESN'T HAVE A SHAFFER BLOWOUT PREVENTER!



For maximum safety follow successful operators everywhere and equip your wells with Shaffer Cellar Control Gates. They will positively close and hold under any pressure encountered in modern drilling. Don't gamble when protection can be so positive.

SHAFFER TOOL WORKS
BREA, CALIFORNIA • HOUSTON, TEXAS
OKLAHOMA CITY, OKLA
EXPORT-OIL WELL SUPPLY COMPANY

of 6,357 feet, where the well was bottomed. Near the base of the Travis Peak or in the top of the marine sediments the well blew out of control, but soon bridged and when casing was set it was set through the producing sand and the well was completed as a dry hole.

If the name "Dillon" had not already been used for a gas sand at the base of the Glen Rose it would have been an appropriate one for these basal Lower Cretaceous beds in Louisiana and Arkansas.

The Ohio Oil Co. No. 6 Holloway at Cotton Valley, recently completed at a depth of 8,530 feet, proved that the beds, which come below the Travis Peak red, are possible oil and gas reservoirs worthy of testing in this general region. Oil and gas were reported at the following depths: 8,118 to 8,149 feet, and below 8,390 feet.

Up to the present time the Torcer beds have shown evidence of production in Pine Island, Cotton Valley and Sugar Creek. Additional drilling will probably prove this to be a prolific source of oil and gas in this region.

TRAVIS PEAK

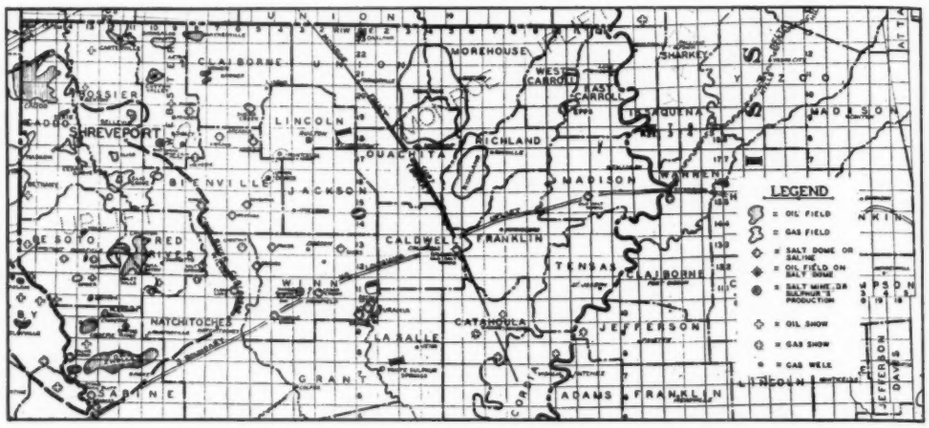
The first knowledge of the Travis Peak formation was obtained from the deep wells drilled in the Pine Island field. The first oil from this formation was found in a sand near the top of the formation. The writer, in an article for the American Association of Petroleum Geologists, "Structure of Typical Oil Fields," Vol. 2, 1929, gave the name "Herndon sand" to this horizon. Although the term "Travis Peak" had been used in Texas nomenclature for a number of years, it was not adopted in Louisiana until several years later.

The Dixie Oil Co. No. 92 Dillon, in Pine Island, gave the first idea of the thickness of the Travis Peak in Louisiana. The top was found at a depth of 3,897 feet and the bottom at 5,919 feet. This entire thickness was cored and all of it found to be nonmarine sand and shale.

In recently drilled wells, our preconceived ideas, that the Travis Peak is nonmarine, have suffered a radical change. The Prairie River Syndicate No. 1 Hutchinson, section 15-15-12, near Caspiana, in southern Caddo Parish, and well drilled in Sabine Parish, while they have not gone entirely through the formation, have penetrated more marine Travis Peak than found in Pine Island without finding any nonmarine beds.

In the Hutchinson well, from a depth of about 5,360 feet to 5,840 feet, chocolate, marine, fossiliferous shale, in places, with a distinct pinkish tint, shows a continuous marine, offshore deposition. The shore line was too far away to receive any clastic material. These fossiliferous, marine sediments, in the region of the Caspiana well, indicate a transgressive sea, which, in the region of Pine Island, was receiving clastic materials contemporaneous with the marine shale deposition in the Caspiana district.

These chocolate, brown and pinkish marine shales came into the section somewhere between Pine Island and Caspiana. They are not present in the wells drilled into the Travis Peak at Sligo. If the subsea depth on the top of the chocolate shale in the Caspiana well is compared with the top of the Travis Peak in the Sligo wells, the Caspiana well is as high structurally as the Sligo gas field. The subsea depth on the top of the Glen Rose in Sligo is only 200 feet higher than it is in the Caspiana well. It looks logical, therefore, that the 500 feet or more of chocolate marine shales in the Caspiana well is an offshore phase of Travis Peak age, and represents a deposition in a transgressive sea.



North Louisiana field

In the Caspiana well from 5,840 to 6,500 feet there is a change from the chocolate marine shale to a more distinct red color. There is an interfingering of red and white sand, soft black to siliceous shale and gray conglomerate looking limestone, the entire section carrying marine fossils.

Whatever may be the final decision on the age of the chocolate shale in the Caspiana well from 5,360 to 5,840 feet, there is no controversy on the age of the red material, from the latter depth to the present depth of well at 5,500 feet, being Travis Peak.

From a depth of 6,645 to 6,750 feet the Caspiana well found a pink colored anhydrite associated with a dark gray Siliceous limestone, shale and red quartzitic sand, grading downward into a lighter colored, slightly calcareous sand. The basal core at 6,750 feet carried pink anhydrite in a light gray, well rounded, sand cemented with calcite. There is no evidence of oolites or other fossil life present.

The presence of pink to white anyhdrite more than 2,000 feet below the basal anhydrite of Middle Glen Rose age is something entirely new for

Cotton Valley, scene of North Louisiana's latest oil discovery

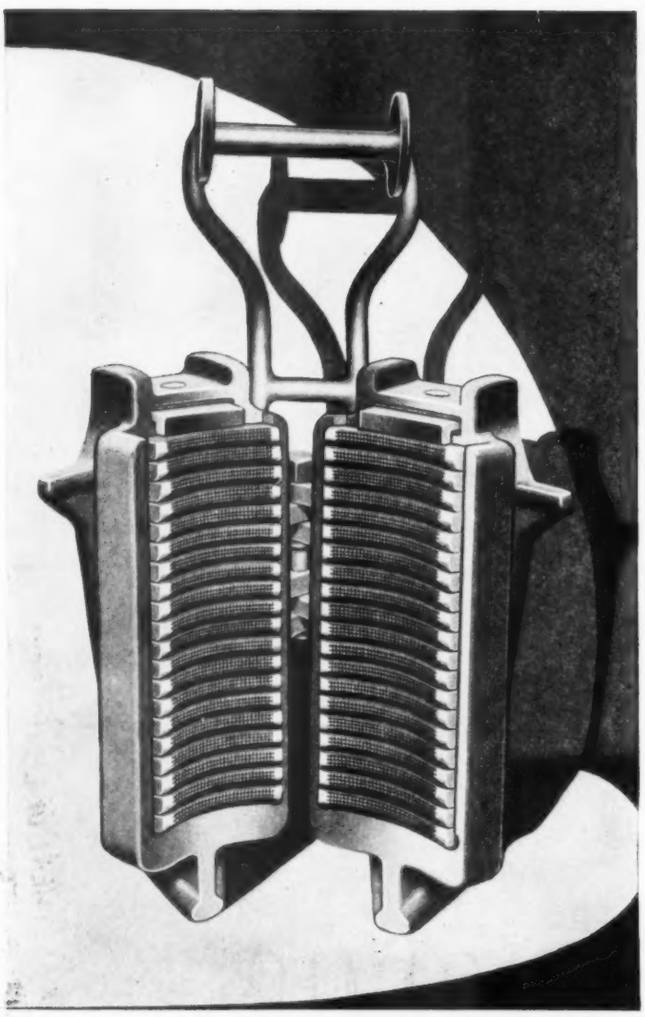
PIONEERS*

IN SUCCESSFUL SEISMIC REFLECTION SURVEYS, DELINEATING THE GLEN ROSE ANHYDRITE IN NORTH LOUISIANA AND EAST TEXAS

*SEISMIC
EXPLORATIONS, INC.
HOUSTON, TEXAS

ROUND TRIPS MADE QUICKLY

With MISSION SLIPS



SAVING MONEY FOR THE OPERATOR:

The greatest cause of delays in handling pipe, namely sticking in the bowl, is positively eliminated through that outstanding principle which distinguishes Mission Slips from all others: . . . . . .

ROLLING DOGS

INSTANT RELEASE

is assured because the dogs roll from the pipe as it is pulled. Positively will not damage pipe.

CONSTANTLY MAKING MONEY-SAVING RECORDS ON DEEP WELLS AND ALL WELLS

THE WORLD OVER

MISSION MANUFACTURING CO.

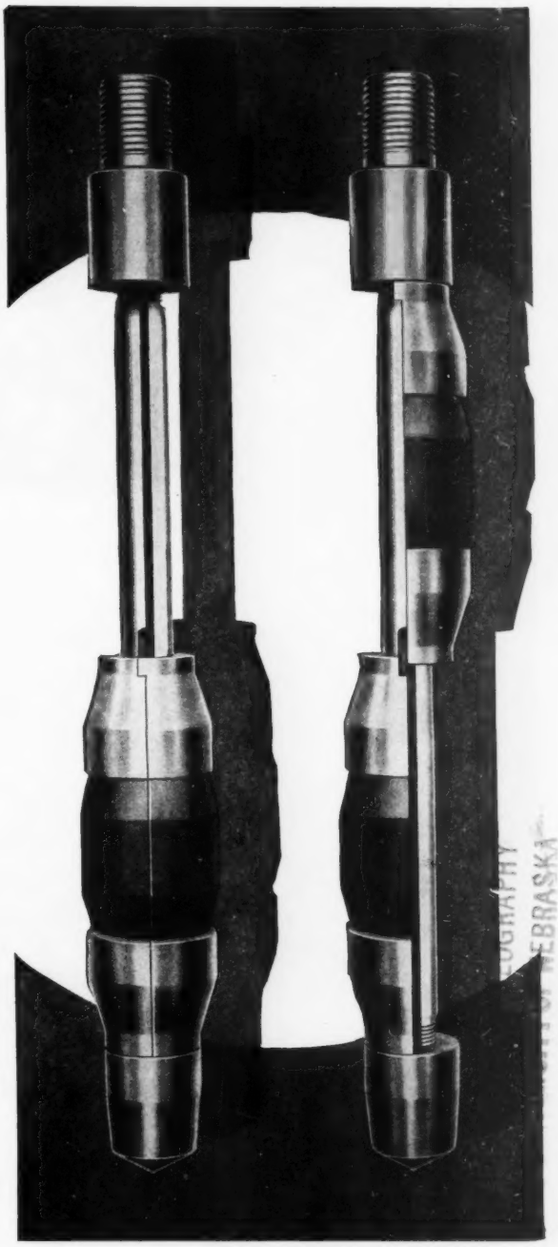
HUMBLE ROAD - - - HOUSTON, TEXAS

Mission Slips . . . . Mission Valves . . . . Mission Pistons . . . . Mission Piston Rods . . . . Mission Swabs

SOLD THROUGH SUPPLY STORES EVERYWHERE

The MISSION VALVELESS SWAB

Goes down FAST through PARAFFIN or GAS



Often when other swabs will not go in the hole

THE MISSION VALVELESS SWAB FALLS LIKE A PLUMMET

. . . because the split-rubber, shown in the illustration, allows free by-pass for gas; and often permits Mission Swabs to pass through paraffin that stops other swabs.

SAFEST SWAB TO OPERATE

THE MISSION SWAB WILL NOT BLOW OUT OF THE HOLE WHEN PULLING LOAD as gas pressure will open split-rubber, permitting gas to by-pass, resuming its load without loss after gas has passed.

Swab will not rise faster than can be spooled. No loose line over derrick floor to catch crew's arms or limbs.

SAVING TIME, MONEY, AND TROUBLE IN DIFFICULT SWABBING JOBS FOR NUMEROUS MAJOR OPERATORS

MISSION MANUFACTURING CO.

HUMBLE ROAD - - - HOUSTON, TEXAS

Mission Slips . . . . Mission Valves . . . . Mission Pistons . . . . Mission Piston Rods . . . . Mission Swabs

SOLD THROUGH SUPPLY STORES EVERYWHERE

More than 100 RODESSA WELLS are flowing into NOWERY J. SMITH SEPARATORS and TANKS

TYPICAL RODESSA TOWNLOT DRILLING SCENE

NOWERY J. SMITH
OIL & GAS SEPARATORS . . . .

ALL sizes and working pressures furnished with either outside or inside float control, and with direct lever connected or pilot controlled. Separators and Control Valves manufactured to our specifications, and designed to handle the many separating problems with our guarantee of separator efficiency.

COLUMBIAN A. P. I.
BOLTED STEEL TANKS . . . .
(Exclusive Distributors)
Galvanized; Cop-Nic; Wrought Iron; Nowery J. Smith Welded Tanks: Steel Walkways.

NOWERY J. SMITH
CYPRESS WOOD TANKS . . . .
Manufactured in our own shops from best grade of Louisiana Cypress, (all clear heart) carefully selected. They last a lifetime. They're resistant to attacks of sulphur laden sour oils or salt water. Made in standard vapor pressure and gas tight types, with water grooved staves and water seal decks. Fittings are non-corrosive. Cypress Baffles and Galvanized Flumes furnished for gun barrels.

A. P. I. Steel Derricks . . . .
Complete Erection and Engineering Service for turn-key installations. Pipe Line and Tank Hook-ups.

NOWERY J. SMITH SUPPLY COMPANY

OIL WELL SUPPLIES

HOUSTON **TEXAS**

BRANCH YARDS AT GULF COAST POINTS

. . . and here's how they're standardizing on NOWERY J. SMITH equipment in the GULF COAST

TYPICAL GULF COAST FIELD SCENE

this territory, and until there is some new evidence in the form of fossils to determine the age of this lower anhydrite and associated rocks, the Caspiana area will remain in geological status quo for the present.

In the Pine Island wells the section of Travis Peak from about 4,900 to 5,900 feet is entirely nonmarine. If the 5,360-foot depth in the Caspiana well represents the top of the Travis Peak, then 1,200 feet of marine Travis Peak sediments have been penetrated without finding any nonmarine and without penetrating the full thickness of the formation.

A number of wells produced oil from a sand near the top of the Travis Peak formation in the Pine Island field. The name "Herndon sand" was given to this producing horizon.

In Cotton Valley the Ohio Oil Co. has just completed an oil well in a sand near the top of the Travis Peak, with an initial flow of 550 bbls. daily through one-fourth inch tubing choke.

The United Gas Public Service Co. recently completed a 3,000,000-foot gas well from a sand near the top of the Travis Peak in its No. 1 Wheeler, section 16-18-16w, Caddo Parish.

Saturated oil cores from the Travis Peak have been taken from one or more wells in the Rodessa field.

In the Sligo gas field the Travis Peak tests have, up to the present time, shown only salt water.

In section 10, Township 17, Range 4w, Lincoln Parish, south of Ruston, Brown, Lide & Greer recently completed a 70,000,000-foot gas and distillate well in the top of the Travis Peak.

The top of the Travis Peak formation in northern Louisiana offers possibilities for oil and gas. On all of the well-defined structures any well to be drilled should make plans to test this formation, unless production is found.

The Lower Glen Rose formation is marine throughout. The upper part is an oolitic limestone interbedded with shale. The middle part of the formation is largely a marine shale, and in the lower part more oolitic limestone and shale occurs.

The 7,000-pound christmas tree hook-up on Cotton Valley deep discovery well

In northern Louisiana the contact of the basal Glen Rose to the Travis Peak is an abrupt change from marine limestone to red nonmarine sand and shale.

The thickness of the Lower Glen Rose in the Rodessa field is 1,030 feet, which is an average thickness for the region.

The Rodessa field is producing from the upper 350 feet of the Lower Glen Rose, and this fact has brought this formation into the limelight and all contemplated deep wells in this general region should make this formation one of the objectives in its tests.

Two horizons near the base of the Lower Glen Rose have produced gas and oil in the Pine Island field. The upper sand was known as the "Dillon gas sand" and the lower as the "Dixie oil sand."

On the east side of the Sligo gas field Will Hall and others completed a gas and distillate well on the Pettitt farm, in the Dillon horizon.

Sugar Creek, Cotton Valley, Sligo, Bethany, Pine Island, Haynesville, Logansport, Union Church, Rodessa are all producing from the Lower Glen Rose.

MIDDLE GLEN ROSE

The Lower Glen Rose is separated from the Upper Glen Rose by anhydrite, distributed through an interval of 300 to 600 feet. The massive anhydrite is usually 200 feet or more in thickness with stringers above and below.

One well in the Pine Island field produced oil for years from near the middle of the anhydrite. The Middle Glen Rose is not considered a very probable source of oil in this region.

UPPER GLEN ROSE

Gray limestone, shale and some sand make up the Upper Glen Rose formation. Its thickness varies from 200 to 400 feet. At no locality in Louisiana, Arkansas, or East Texas, has the Upper Glen Rose produced oil in commercial quantities.

PALUXY

The uppermost beds of the Lower Cretaceous in the tri-state area of Texas-Arkansas-Louisiana are a distinct change from the marine beds of limestone shale and sand of the Upper Glen Rose to a red sand, shale and lime of Paluxy age.

The Talco oil field of Titus County, Texas, is

WELL INFORMED OPERATORS SPECIFY UNIBOLT, THE ONE-BOLT COUPLING

And this goes for any other active oil state since UNIBOLT has proven its many advantages over conventional connecting devices.

UNIBOLT assures tight, leak-proof joints, more strength with less weight, interchangeability of parts, and long life service.

Operators using UNIBOLTS rig up and tear down in far less time than users of old coupling methods.

The same coupling principle that makes UNIBOLT so popular around a rig today is being equally well applied to pipe connections on tank batteries, flow lines, Christmas-trees, etc.

THORNHILL-CRAVER CO., Houston, Texas

NEXT TIME YOU BUY COUPLINGS — SPECIFY UNIBOLT

producing from near the top of the Paluxy formation, the trap being formed by a closure against a fault.

The Talco fault has been traced through two or three counties adjoining Titus County by seismograph work which has resulted in the leasing of large blocks of acreage and the drilling of a number of wildcat wells.

In a number of wells drilled in northwest Louisiana and eastern Texas shows of oil and gas have been reported from the top of the Paluxy red beds. On favorable structures it is possible to find other producing fields in the Talco producing horizon.

The map of North Louisiana fields is based on H. D. Easton's Index Map published by Globe Map Co., Shreveport, La.

Rodessa Drilling Practice

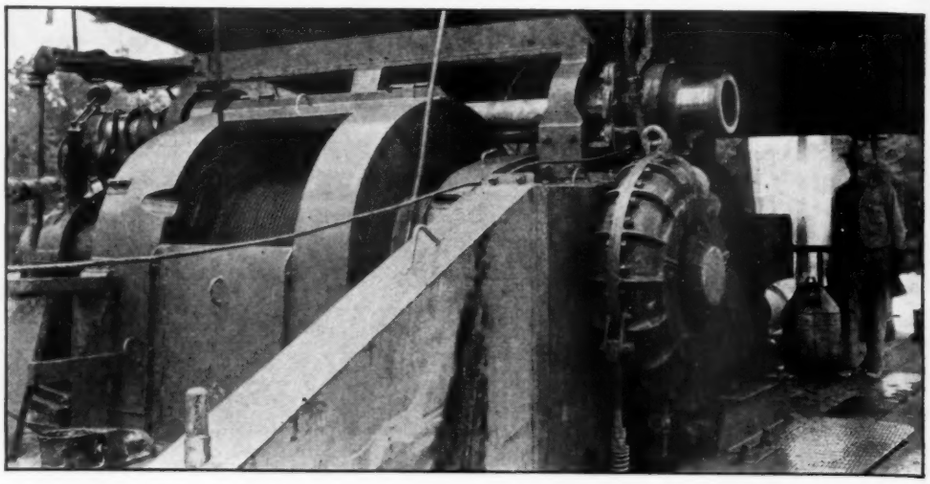
(Continued from Page 77)

the design and application of rock bits. Whereas, 30 rock bits were originally considered average for the drilling of a 6,000-foot hole, today the average is 17 or 18. Special rock bits were designed specifically for this field, embracing the longer tooth, ball thrust, heavy bearing, and other features making them more applicable and serviceable in these formations.

The usual procedure is now to drill to the Nacatoch sand rock, occurring at about 1,700 feet, with one fishtail bit. The Nacatoch section, about 450 feet thick, is then penetrated with a rock bit. Fishtail or drag bits continue to the chalk series, occurring at about 2,200 feet, when usually the same rock bit that drilled the Nacatoch is suitable for drilling the chalk section. The water string is always set in this formation. Some contractors continue the use of the rock bit from this point to total depth, while others find it desirable to use the drag bit to a depth of from 3,600 to 4,000 feet, and the rock bits to total depth.

Even with the wide experience gained by the drilling of 358 wells to date, Rodessa drilling is by no means a cut and dried proposition. Thickness and hardness of formations vary even from location to location, and while one well might be drilled with 15 rock bits, an offset drilled by the same crew has often required many more.

The universal use of weight indicators, assuring that the lowest weight for the most effective drilling will be carried, has also assisted greatly in reducing the number of rock bits required per well.



Unitary drawworks

Unitized equipment is quite prominent in the field today. The newest and heaviest design drawworks, portable as one unit, is proving satisfactory. One unitary drawworks provides six-drum speeds, three rotary-sprocket speeds, and two cathead speeds, all of which are available from the driller's position. Such units offer many safety features, and are capable of 12,000-foot drilling. The continuous pump-driven oil bath circulating system is employed on other unitized drawworks, using the extra large drums, and oversize shafts. Vertical steam engine operated drawworks are also among the newest type in use at Rodessa. The hydromatic brake on heavy duty drawworks is commonly seen in Rodessa drilling.

Boiler feed assemblies, containing the boiler feed pumps, steam pump and electrical generators, switchboard, etc., are becoming more unitized in various arrangements by Rodessa operators. Magnolia Petroleum Co. is now leading the field in this regard. Their equipment of this type is assembled in their Kilgore and Electra shops. They consist of two 10 by 4½ by 10 Wilson-Snyder boiler feed pumps serving three 126-horsepower oil field boilers, two electrical generators steam driven, electrical switch box serving the entire rig, flood-

FAST

Latest type inclined beam Askania Torsion Balances. Normally cover one station in an hour and twenty minutes. This makes it possible to cover six stations per day per instrument without undue strain on the observer.

Its light weight, its portability, coupled with such speed of operation, makes it now possible to use Askania Torsion Balances with small parties; this reduction in personnel cuts station costs to an appreciable extent. Further unnecessary field expense is also eliminated by the fact that Askania torsion balance data are permanent—they need not be checked and rechecked.

Cost of operation data and other details about Askania Torsion Balances will be gladly furnished on request. There's no obligation, of course.

ASKANIA

AMERICAN ASKANIA CORPORATION

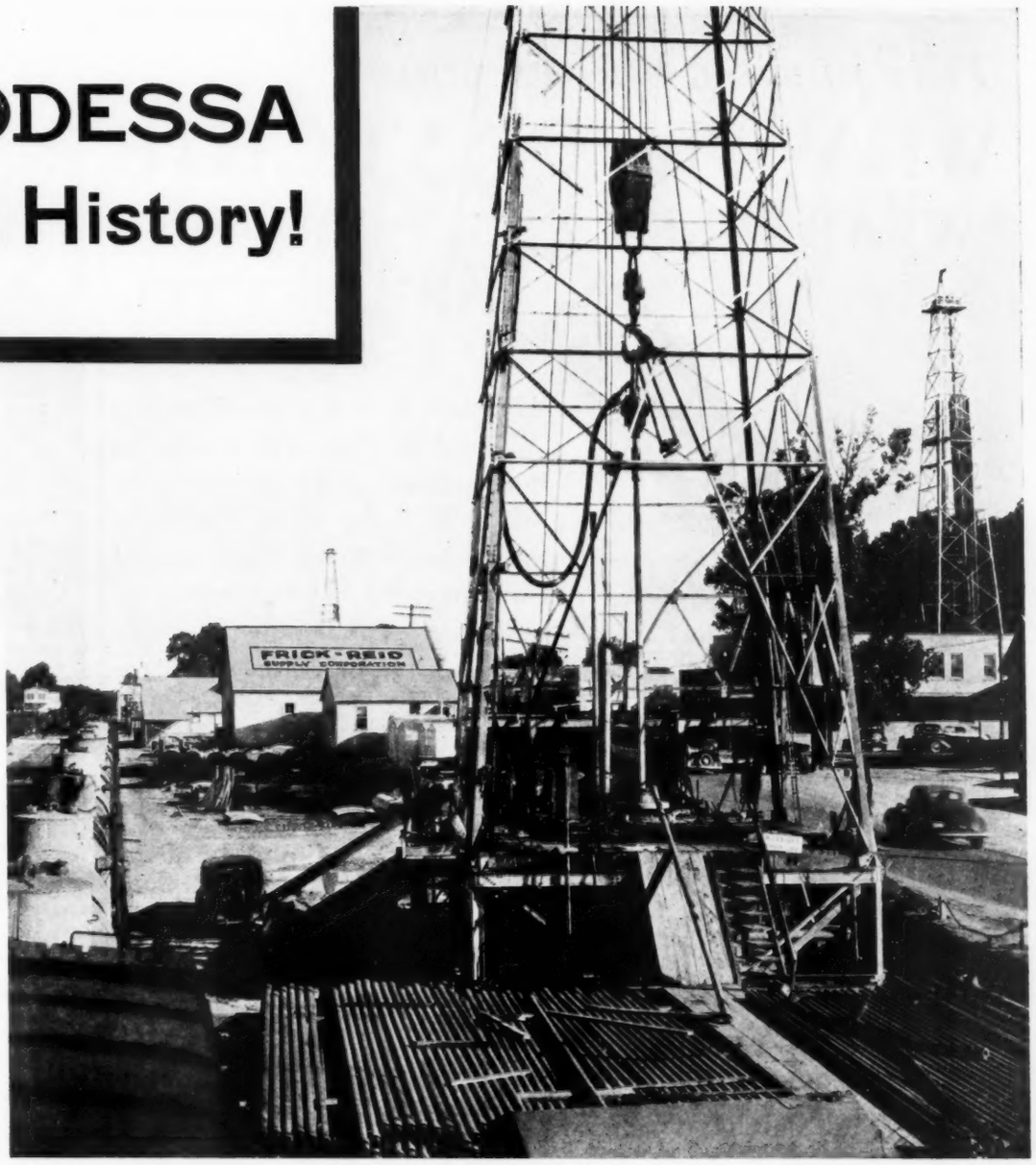
M & M BUILDING HOUSTON, TEXAS

Distributors of

ASKANIA TORSION BALANCES

PORTABLE • FAST • ACCURATE • DURABLE • STANDARD

When RODESSA is Ancient History!



A VERY FINE UNDERSTANDING HAS GROWN UP BETWEEN RESPONSIBLE OIL COMPANIES, THE FRICK-REID SUPPLY CORPORATION AND THESE LEADING MANUFACTURERS OF OIL COUNTRY SUPPLIES AND EQUIPMENT

- AXELSON MANUFACTURING COMPANY
  Steel and Reading Genuine Puddled Wrought Iron Sucker Rods—Working Barrels.
- BEAUMONT IRON WORKS COMPANY
  Rotary and Pumping Equipment.
- BLAW-KNOX COMPANY
  Gas Cleaners—Steel Gratings—Tracifiers.
- DONOVAN BOILER WORKS
  Oil Country Boilers.
- FOOTE BROS. GEAR & MACHINE CORP.
  Reduction Gears for Pumping Units.
- JENSEN BROS. MFG. COMPANY
  Pumping Jacks.
- JONES & LAUGHLIN STEEL CORPORATION
  Tubular Goods.
- LINEAR PACKING & RUBBER CO., INC.
  Packing for All Needs.
- MIDWEST PIPING & SUPPLY CO., INC.
  Welding Fittings.
- NATIONAL TRANSIT PUMP & MACHINE CO.
  Steam Pumps—Compressors.
- J. P. RATIGAN
  "Sure-Grip" line of Pumping Equipment including Grips, Clamps, Beam Hangers, Rod Elevators, Etc.
- RAYBESTOS-MANHATTAN, INC.
  Raybestos Rotary Brake Lining.
- READING IRON COMPANY
  Reading Genuine Puddled Wrought Iron Tubular Goods.
- JOSEPH REID GAS ENGINE COMPANY
  Gas and Diesel Engines — Pumping Powers.
- REPUBLIC RUBBER COMPANY
  Transmission and Conveyor Belting—Mechanical Rubber Goods.
- JOHN A. ROEBLING'S SONS COMPANY
  Wire Lines—Gas and Electric Welding Rods.
- WALWORTH COMPANY
  Valves—Fittings—Tools—Lubricated Plug Valves.
- WHELAND COMPANY
  Slush Pumps—Swivels—Rotary Tables—Steam Engines.
- WHITLOCK CORDAGE COMPANY
  Manila Drilling Cable—Bull Ropes—Cat Lines—Waterflex Cordage.

When the white sand hills of Rodessa are no longer studded with derricks and criss-crossed with pipe lines » » » when men have produced the rich harvest of black gold to the last barrel from the last well and the sterile soil goes back to the frugal farmers » » » it will be remembered in the oil industry that FRICK-REID, there in the flush-production days with the cream of supplies and equipment such as DONOVAN'S Oil Country Boilers — BEAUMONT No. 11 Dreadnaught Draw Works and Tubing Heads—WHITLOCK Manila Cordage and other items from the world's foremost manufacturers, was one to remain through the field's decline to serve faithful customers with dependable products. ¶ FRICK-REID appreciates its customers; its customers appreciate FRICK-REID.

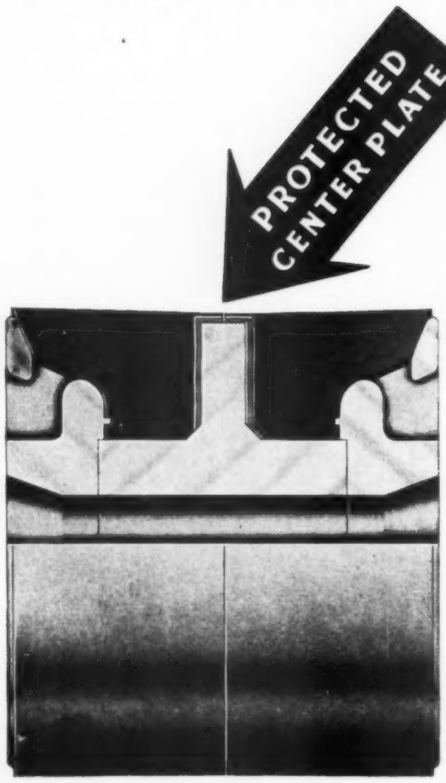
FRICK-REID
SUPPLY CORPORATION

PITTSBURGH, PA. **TULSA, OKLA.**

Equipment Suppliers Exclusively
Branch Stores in Old and New Fields

This picture shows you

WHY MacCLATCHIE "WEAREVER" PUMP PISTONS ARE BETTER



The design of the MacClatchie "Wearever" Pump Piston is the outcome of years of research and field tests. Experience has taught us that; no steel should come in contact with the liner—that the replaceable rubbers must be supported on the pressure stroke with a rigid steel member—and that on the suction stroke the rubbers must be supported at the rear with some stiffening means and be held against suction with a guard such as our perforated end plate. It takes all of these features to obtain the best piston and liner efficiency. Only in MacClatchie Pistons can you find this real economy.

Proof of MacClatchie "Wearever" Piston's greater wear lies in this fact: that in a series of tests, conducted under equal and various oil field conditions, in competition with other makes, MacClatchie "Wearever" Pistons have worn as high as 4 times longer without replacement of the original rubbers or liners, it being necessary on some competitive makes to change each liner with the 4 changes of piston.

In abnormal conditions where hot fluid, oil or gas conditions are encountered we recommend "Wearever" pistons with resistal rubbers—a tough composition not affected by heat or Hydrocarbons.

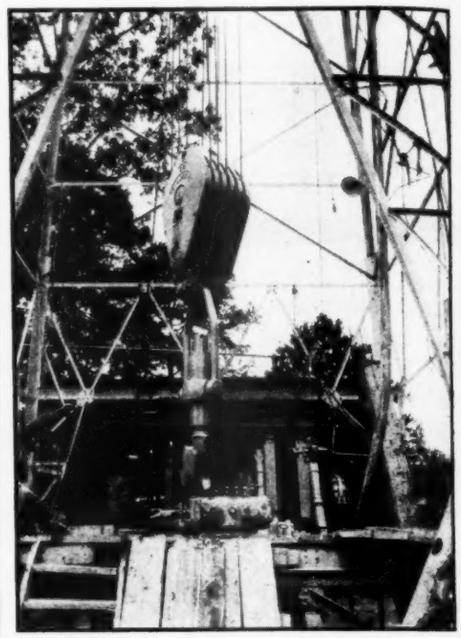
MacClatchie Pistons Wear Longer—are easily renewed at half the cost.

Stocked and Sold By Leading Supply Houses In Every Locality

There is one outstanding reason why each MacClatchie Tool gives better service. This is one of a series telling WHY.

MacCLATCHIE
MANUFACTURING COMPANY
Compton, California Houston, Texas
Export: George R. Woods, 17 Battery Place, N.Y.C.

lights for the boilers, and a conveniently arranged tool box, all mounted in a compact manner upon two 15-inch pipe skids, so arranged as to assist in rapid movement from location to location. Extensions are provided for all gate-valve handles



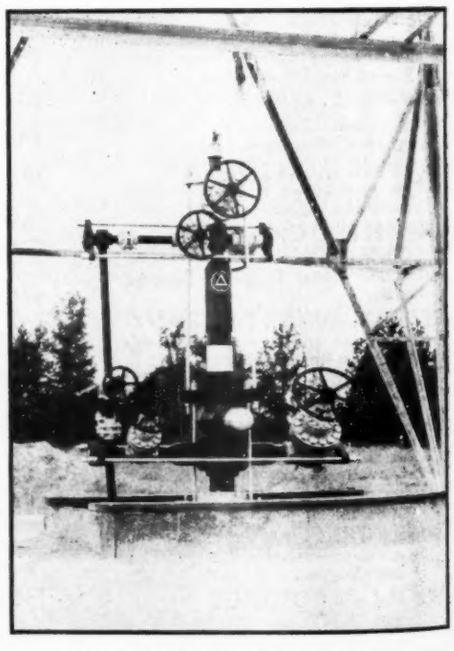
Showing traveling block and hook in front of unitized drawworks

located in dangerous places near moving machinery. The portable floor for this assembly is constructed of three-quarter inch second-hand sucker rods, spot welded to prevent slippage, and arranged in four sections which are solid in place but readily movable. The skids not only contribute to the portability of the assembly, but serve as preheaters for the water to the drilling boilers.

The majority of slush pumps appearing in the field are mounted on skids for the sake of portability. Certain pumps are individually driven, either by electrical motors or vertical twin-cylinder steam engines.

The increasing use of this unitized equipment is not only giving greater safety in drilling operations, but has materially contributed to the decrease in rigging up time from seven or eight days to three and one-half or four days.

The South Central Drilling Co. recently moved



Typical high-pressure hook-up at Rodessa

in one of the heaviest and most modern drilling rigs to appear in the field. Receiving its driving power from a 12 by 12 vertical two-cylinder steam engine, the two-shaft, three-post, dual engine drive, unitized, chain driven, drawworks gives six speeds and provides for a high table speed with slow engine speed. The three-post arrangement on the shafts give a very short span on the drum, with the resulting increase in strength and stability. Hydromatic brake is mounted opposite the driller's position. This rig operated successfully in other deeper fields where maximum loads of 575,000 pounds were encountered.

The slush pit layout of this rig also varies somewhat from usual practice. The discharge line from the well delivers the drilling fluid into a wooden settling ditch, thence out over the screen (used during the entire period of drilling) the shale particles are then transported to a nearby pit and discarded, while the screen mud is delivered into a second settling trough and into a small 10 by 10 by 6 pit, where the mud is conditioned for reintroduction into the hole. The small size conditioning pit permits closer control over the viscosity and weight of the fluid, serves to hasten the time of introduction when quick conditioning becomes necessary, and reduces the thinning action of persistent rains during certain seasons of the year. All steam lines are completely insulated to reduce condensation and provide dry engine steam

Marion County Wildcat

SHREVEPORT, La., Oct. 12.—A contract was reported signed by W. F. Lacy, Shreveport, for drilling a wildcat to the Rodessa producing levels on the Mrs. Lizzie Henderson 35-acre tract in the R. Bennington Survey of Marion County.

Location for the test is 2½ miles northeast of Jefferson and 12 miles southwest of producing limits in the Texas side of the Rodessa field.

The contract was reported signed between Mr. Lacy and Ray Overlea of Oklahoma City. Flesh & Hootkins, Jefferson attorneys, and others, with operations to start on or before November 10, provided interested parties obtain 100 acres in vicinity of site.

Some reports are that those interested having difficulty now securing needed tracts.

Marion County's other wildcat, Tom Bell and others No. 1 Miss Carrie Moseley, in David Lane Survey, due to resume activity in next few days as operators complete laying water line to Big Cypress Bayou, 1½ miles distant.

Louisiana First Aid Contest

The tenth annual American Legion first aid contest will be held in Shreveport, La., on November 11. Fourteen teams have registered to date. The Baton Rouge fire department will attempt to retain the Mid-Continent Oil and Gas Association cup won by them last year.

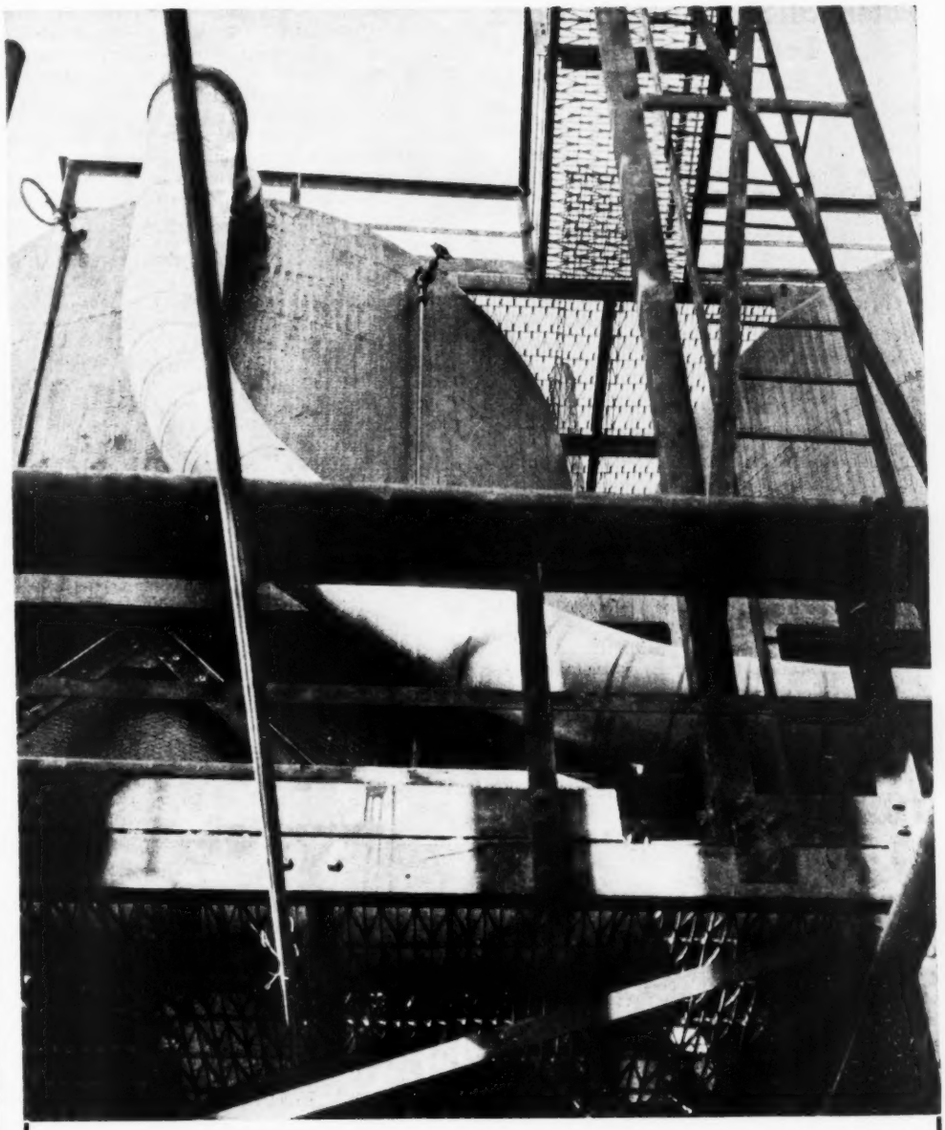
The judges will be members of the medical profession who have made a special study of the Bureau of Mines Manual. Cups will be awarded to three experienced teams and to three novice teams; in addition there will be many individual prizes to members of winning teams.

The Low-McFarlan Post sponsors the contest and will entertain at a dance after the prizes have been awarded. Bureau of Mines men are in the territory for the purpose of coaching teams who wish to participate. A general invitation is extended to all teams to register.

Harrison County Test

SHREVEPORT, La., Oct. 12.—A Harrison County test started some time ago 9 miles southwest of Marshall by D. J. Miller and others of Houston on the Bivens tract in the William Pettus Survey and now at 3,129 feet, may resume soon, it is reported. With leases on the 7,200-acre block in escrow, Mr. Miller has until October 10, it was reported. It is contemplated as a Glen Rose test.

South of Marshall the Empire Gas & Fuel and Lion Oil Refining companies are reported leasing.



Grating is a relatively small part of your plant—but extremely important to the safety of the men who walk and work upon it.

That's why a few extra dollars spent for ARROWHEAD GRATING is usually a good investment.

ARROWHEAD IRON WORKS
KANSAS CITY, MO.
VINSON SUPPLY CO., HUNT BLDG., TULSA
OKLAHOMA DISTRIBUTORS

REGAN
CROWN BLOCKS AND TRAVELING BLOCKS
Complete stock of Regan Crown Blocks, Traveling Blocks and Casing Heads —also parts, carried at our Oklahoma City plant—or through your supply store. Catalog and details gladly sent on request.
DISTRIBUTORS FOR OKLAHOMA AND KANSAS
MID-CO TOOL & SUPPLY CO.
1006 SE. 29 ST., OKLAHOMA CITY, OKLA.
Dial 7-8558

Potential Structures In North Louisiana Field

(Continued from Page 67)

dicating producing possibilities from these formations.

Ohio Oil Co. No. 6 Holloway, section 23-21-10, Webster Parish, Travis Peak discovery well at Cotton Valley, penetrated the marine series of the Trinity from 7,618 to 8,556 feet before plugging back, and logged 25,000,000 feet of gas from 8,118 to 8,149 feet, and several important showings below 8,400 feet. The fact that the Ohio Oil Co. chose to plug this well back without thoroughly testing these horizons should not detract from their attractiveness when it is known that the casing program of the well permitted only 4-inch drill pipe to be used below 8,400 feet, and the depth and pressures made further drilling very slow. This same company plans a 12,000-foot test in their No. 4 Bodcow Lumber Co., section 28-21-10, now drilling below 3,000 feet. The United-Standard-Triangle No. 2 Durrett, section 31-20-5, Sugar Creek gas field, has logged saturation in each of the horizons noted at Cotton Valley. This test is now bottomed at 8,616 feet and operators are fishing for 800 feet of stuck drill pipe.

Even though it is reasonable to conclude that most of the deep reserves developed in this territory over the next few years will be from the marine beds of Trinity age, possibilities of older Mesozoic or Permian (Paleozoic) production cannot be ignored.

The discovery of oil and gas on the northwestern flank of the old Smackover, Arkansas field, from what is generally referred to as "Permian," is the only marker now available from drill holes for correlating these older beds. Later investigations may prove the age of this limestone to be Jurassic and not Permian, but it is definitely known to be older than Cretaceous and therefore is quite significant in considering future reserves in older Mesozoic or Paleozoic beds in North Louisiana. This limestone was encountered below the Cretaceous beds at Smackover at depths averaging 4,900 feet, but it is impossible to predict the depth at which it might be penetrated in North Louisiana as the complete thickness of the marine series is not yet known.

At the present time important deep wildcat tests are being drilled on 12 structures in North Louisiana, either producing from shallow beds or indicated by seismograph or geological exploration. Areas now receiving these deep tests, all slated to thoroughly test the Travis Peak and possibly below, include Gibsland, Caspiana, Sligo, Caddo, Cross Lake, Sugar Creek, Lisbon, Monroe, Richland, Converse, Zwolle and Cotton Valley.

The published geological literature on North Louisiana oil and gas fields to the base of the Upper Cretaceous is quite complete, with the possible exception of the dearth of material on stratigraphic occurrence of petroleum. For a recent bibliography on this subject the reader is referred to Henry V. Howe's A.P.I. paper on "Louisiana Petroleum Stratigraphy" appearing in the April 16, 1936, issue of The Oil and Gas Journal.

Due to the recent discovery, rapid development, and necessary change from paleontological to lithological logging and correlation in North Louisiana drilling in the Lower Cretaceous formations, the published literature on this section is as yet meager, and it provides an open field for geological research and exploration.

California Co. to Shreveport

SHREVEPORT, La., Oct. 12.—Entry of the California Co., Standard Oil Co. of California subsidiary, into this area, is indicated with establishment of an office in the Slattery Building, in charge of E. L. Burchfield.

Crude Production in Rodessa Is Typical Paraffin Base Oil

(Continued from Page 72)

special naphthas, or to produce a low endpoint gasoline and a large yield of kerosene. The yield and characteristics of the latter operation is shown.

Rodessa crude was fire distilled taking overhead two cuts as follows:

	Gasoline	Kerosene
Yield per cent off crude	26	29
Gravity	67.5	49.3
I.B.P.	110	334
10 per cent at	152	363
20	171	375
30	188	386
40	203	398
50	216	412
60	230	427
70	246	443
80	261	459
90	284	480
95	313	498
Endpoint	330	517
Per cent at 158° F.	12	...
Per cent at 212	46	...
Per cent at 221	52	...
Per cent at 284	90	...
Recovery	97	98
Color	30+	30
Corrosion	Neg.	Neg.
Doctor	Neg.	Neg.
Octane number	51.5	...
Tagliabue flash—closed cup	...	128
Cc. lead to equal 70 octane number	1.5	...
Burning test (24 hours)	...	Good
Flock test	...	Neg.

Another method of operation is to produce a light gasoline fraction, Stoddard solvent and kerosene.

Per cent off crude	21	17	14
Product:	300 e.p. gasoline	Stoddard solvent	Kerosene
Gravity	68.5	49.5	46.1
I.B.P.	106	299	427
10 per cent at	151	311	443
20	168	316	448
30	182	321	452

(Continued on Next Page)

DATA SHEET—NORTH LOUISIANA OIL AND GAS FIELDS

Field and parish—	No. wells producing	Proven acreage	Present daily av. oil prod.	Total accumulated oil product'n to 7-1-36	Est. total accu. gas production to 7-1-36 10-oz. pr. base (1,000 cu. ft.)	Type structure	Producing horizons—Depth	Producing horizons—Name	Deepest horizon tested to date—
Bellevue, Bossier	75	1,500	960	9,174,900	2,200,000	Faulted dome	370 1,010 1,800	Nacatoch Buckrange Buckrange	Lower Trinity, T.D. 6,137 ft.; nonproductive.
Bethany-Wascum, Caddo	39	1,800	.....	.....	11,000,000	Anticline	600 2,000	Nacatoch Buckrange	United Gas, Lewis Survey, Panola County, Texas; T.D. 5,860 ft., bottom Lower Glen Rose.
Bull Bayou, DeSoto-Red River	181	14,300	1,455	55,423,000	70,000,000	Dome	800 2,625	Nacatoch Basal U. Cre.	Lo. Glen Rose, T.D. 6,141 ft., dry.
Caddo-Pine Island, Caddo	1,081	47,500	6,720	148,038,452	133,600,000	Anticline	800 1,400 2,200 3,600 4,000	Nacatoch Annona Ck. Woodbine Glen Rose Travis Peak	Lower Trinity, T.D. 6,351 ft.
Converse, Sabine	79	1,600	825	1,284,000	.....	Dome	1,525 1,610 1,850 3,400	Nacatoch Saratoga Annona Ck. Lo. U. Cre.	Cox & Whitehurst No. 1 Whitney Corp., sec. 8-9-13; now drilling 5,503 ft.
Cotton Valley, Webster	54	7,000	800	14,069,308	72,500,000	Anticline	2,200 4,300 4,400 5,518 8,120 8,270 8,480	Blossom Anhydrite Lo. Glen Rose Holloway (Travis P.) (?) (?) (?)	Ohio Oil Co. No. 6 Holloway, sec. 23-21-10; T.D. 8,530 ft.; Lower Marine Trinity.
Elms Grove, Bossier	35	14,000	400	3,002,800	188,100,000	Anticline	800 3,100	Nacatoch Tokio	T.D. 5,380 (?)
Epps, E. & W. Carroll	5	1,200	.....	.....	885,000	Dome	2,100	Navarro	T.D. 3,142 ft.; igneous rock.
Haynesville, Claiborne	331	7,500	3,400	64,817,000	.....	Anticline	2,850 4,300	Buckrange Glen Rose	T.D. 5,100 ft.; Glen Rose.
Homer, Claiborne	365	3,000	2,565	65,562,000	5,340,000	Faulted dome	1,400 2,800	Nacatoch Buckrange	T.D. 4,505 ft.; Glen Rose.
Holly, DeSoto	7	75	131	833,380	.....	Nose	....	Eagleford	T.D. 3,373 ft.; Upper Cretaceous.
Longwood (Blanchard), Caddo	13	400	.....	.....	5,363,505	Anticline	2,000 5,900	Buckrange Travis Peak	United Gas Co. No. 1 Wheeler, sec. 16-18-16; T.D. 5,911 ft.; Travis Peak.
Monroe, Ouachita-Union-Morehouse	500	125,000	.....	.....	1,950,000,000	Anticline	2,300	Navarro	Federal Pet. No. 1 fee; T.D. 7,021 ft.; now drilling.
Rodessa, Louisiana-Caddo	283	26,000	59,111	9,672,435	500,000,000	Faulted anticline	5,900	Lo. Glen Rose	Present producing zone.
Rodessa, Texas-Cass	61	.....	13,125	.....	.....	.....			
Richland, Richland	150	50,000	.....	.....	432,000,000	Anticline	2,340	Tokio	Gulf Ref. Co. No. 1 Rhymes, sec. 32-17-6e; now drilling 6,950 ft.
Pleasant Hill, Sabine-DeSoto	35	800	145	1,409,000	.....	Anticline	3,000	Washita	T.D. 5,064 ft.; Glen Rose.
Shongallo, Webster	5	6,000	.....	100,000	75,000	Anticline	1,650	Buckrange	T.D. 4,750 ft.; Glen Rose.
Sligo, Bossier	40	4,500	.....	.....	37,250,000	Dome	845 1,710 2,445 4,275 5,150	Nacatoch Buckrange Tokio Glen Rose Pettit	T.D. 5,696 ft.; Travis Peak; SE cor. sec. 23-17-12.
Spring Hill-Sarepta, Carterville, Bossier and Webster	62	1,700	420	2,400,000	42,000,000	Anticline	2,690 3,100	Buckrange Tokio	T.D. 5,120 ft.; Glen Rose.
Sugar Creek, Claiborne	12	2,750	.....	.....	24,500,000	Anticline	4,310	Glen Rose	T.D. 8,616 ft.; Marine Trinity; not yet completed; SW cor. sec. 31-20-5.
Sibley, Webster	3	120	.....	.....	(New)	Dome anticline	5,600	Glen Rose	Present depth.
Tullos-Urania, Winn-Grant-LaSalle	213	3,750	3,082	20,160,190	.....	Unconformable monocline	1,530	Wilcox (Tertiary)	T.D. 6,463 ft.; Tokio.
Zwolle, Sabine	80	65,000	993	11,687,000	.....	Faulted anticline	2,300	Ck. Rock	T.D. 7,155 ft.; Lower Glen Rose.
Union Church, Lincoln-Bienville	3	120	.....	.....	(New)	(?)	5,600 6,567	Glen Rose Travis Peak	Present horizon.

BRIDGEPORT at RODESSA

.IN RODESSA

you'll find this new Bridgeport Store completely stocked with new and modern equipment, especially selected to meet the operating requirements of the territory it serves.

Included in the many items carried in stock here for immediate delivery, day or night, are the following:

National Tube Shrink-Grip Drill Pipe with Reed Shrink-Grip Tool Joints installed.

National Tube Seamless Pipe in the sizes and weights used in the territory.

Baroid, Aquagel and other Drilling Mud conditioners.

Allis-Chalmers Rotary Mud Screens.

Long, Bridgeport, completely Heat-Treated Drill Collars.

Large Steam Drilling Boilers.
(In Chattanooga yards ready for immediate shipment.)

and practically all other equipment handled by the conventional supply store.

The Rodessa, La., store, and all other Bridgeport Stores, are open 24-hours a day—Telephone at any hour of the day or night—we're always on tour.

We invite you to take advantage of our facilities at Rodessa for rendering a distinctive type of *supply service.*

BRIDGEPORT MACHINE COMPANY
MANUFACTURERS DISTRIBUTORS
OIL DRILLING-FISHING AND PRODUCTION EQUIPMENT
GENERAL OFFICE AND WORKS: WICHITA, KANSAS

Other new Bridgeport Stores recently opened in Texas: CORPUS CHRISTI - TALCO ODESSA and KERMIT.

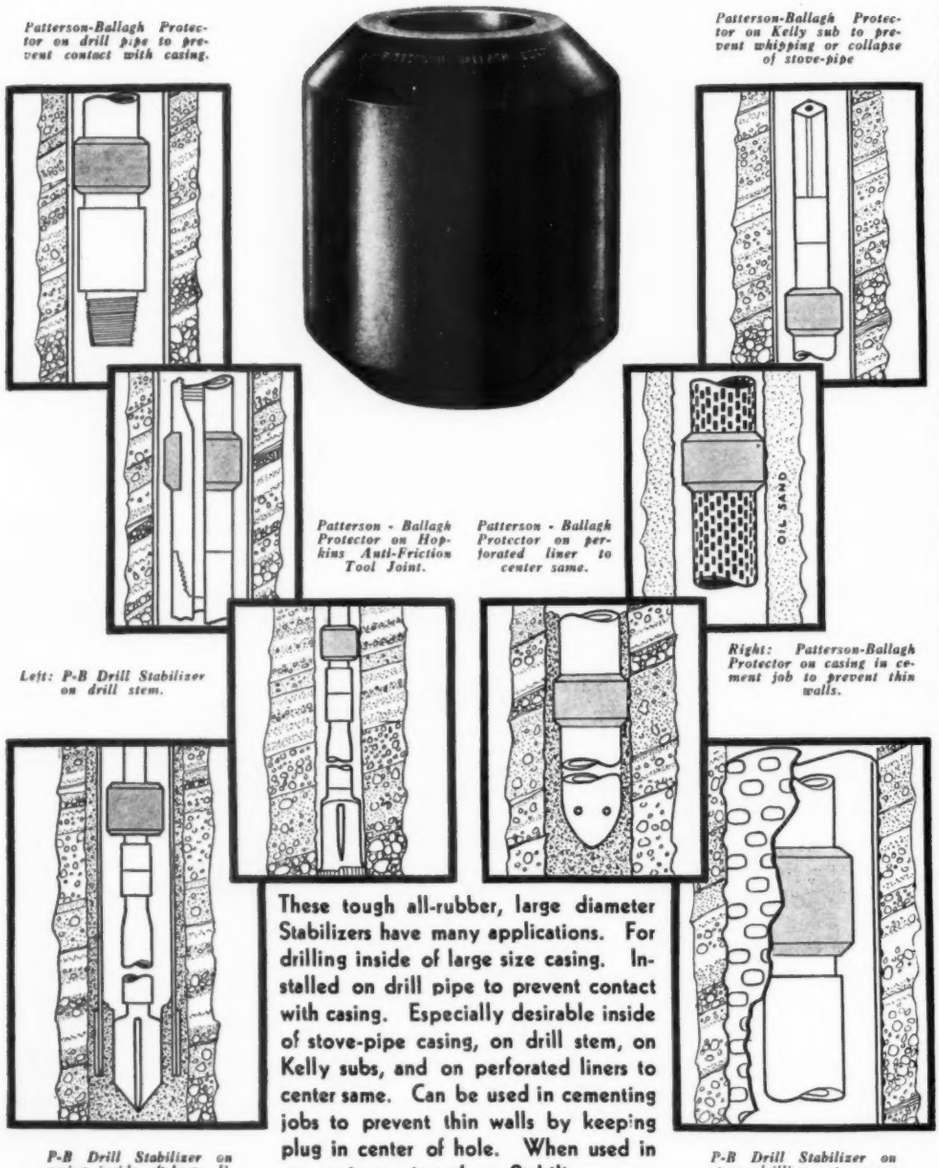
HOUSTON . DALLAS . SAN ANTONIO . CORPUS CHRISTI . SHREVEPORT . ODESSA
TULSA . OKLAHOMA CITY . WICHITA . NEW YORK CITY . AND BRANCH STORES

PATTERSON-BALLAGH

HEAVY-DUTY

DRILL PIPE STABILIZERS

for special applications



Patterson-Ballagh Protector on drill pipe to prevent contact with casing.

Patterson-Ballagh Protector on Kelly sub to prevent whipping or collapse of stove-pipe

Patterson - Ballagh Protector on Hopkins Anti-Friction Tool Joint.

Patterson - Ballagh Protector on perforated liner to center same.

Left: P-B Drill Stabilizer on drill stem.

Right: Patterson-Ballagh Protector on casing in cement job to prevent thin walls.

P-B Drill Stabilizer on casing inside of large diameter stove-pipe casing.

P-B Drill Stabilizer on stem, drilling out cement plug.

These tough all-rubber, large diameter Stabilizers have many applications. For drilling inside of large size casing. Installed on drill pipe to prevent contact with casing. Especially desirable inside of stove-pipe casing, on drill stem, on Kelly subs, and on perforated liners to center same. Can be used in cementing jobs to prevent thin walls by keeping plug in center of hole. When used in stove-pipe casing, these Stabilizers practically eliminate trouble from collapsing or from a broken seat.

ADD YEARS OF LIFE TO YOUR WELL

PATTERSON-BALLAGH CORPORATION

Plant and General Offices:

1900 East Sixty-Fifth Street, Los Angeles, Calif., U.S.A.

New York Office: 39 Cortlandt Street, New York City. Oklahoma Office: Oklahoma City, 1704 N. W. 17th St. Texas Office: Houston, 515 M. & M. Building. Louisiana Office: Box 23, Oil City, La.

40	193	326	457
50	203	332	462
60	213	340	467
70	224	348	475
80	236	358	485
90	253	374	500
95	269	388	515
Endpoint	301	405	526
Per cent at 350° F.	...	72	...
Recovery	98	98	98
Color	30+	30+	30
Corrosion	Neg.	Neg.	Neg.
Doctor	Neg.	Neg.	Neg.
Octane number	57.0	...	...
Tagliabue flash, C.C., deg. F.	...	100	180
Cc. lead to equal 70 octane No.	1.15	...	...

LUBRICATING OIL

A sample of 41.7-degree A.P.I. gravity Rodessa crude was distilled under reduced pressure (after gasoline and kerosene had been removed at atmospheric pressure). Two procedures were used:

Run I—The bottoms were reduced to as low a residue as possible.

Run II—The bottoms were reduced to a stock which could be treated to bright stock.

The yields by the two procedures were as follows:

	I	II
Gasoline	27.5	27.5
Kerosene	17.5	17.5
Gas oil	25.0	25.0
100 vis. neutral	10.0	10.0
(S.A.E. 10) 200 vis. neutral	10.0	5.0
(S.A.E. 50) Motor oil (91 vis. @ 210)	6.25	...
Residue	2.50	13.75
Loss	1.25	1.25

Tests on lubricants from Run I:

	100 vis. neutral	S.A.E. 10	S.A.E. 50
Gravity	33.1	30.0	27.4
Viscosity @ 100° F., S.U.	100	228	...
Viscosity @ 210° F., S.U.	...	48	91
Color, N.P.A.	2	4	7
Flash, C.O.C.	340	420	510
Fire, C.O.C.	395	490	620
Pourpoint	90	105	125

The S.A.E. 10 and 50 oils were treated with 5 pounds of acid per barrel, contacted with 5 pounds of clay per barrel, and dewaxed with benzol-acetone mixture. Tests of the treated oil are shown:

	100 vis. (untreated)	S.A.E. 10	S.A.E. 50
Gravity	33.1	30.0	24.5
Color, N.P.A.	2	3	5
Carbon residue, per cent	...	.10	1.32
Flash, C.O.C.	340	435	515
Fire, C.O.C.	395	490	625
Pourpoint	90	25	25
Viscosity S.U. @ 100° F.	100	229	1,138
Viscosity S.U. @ 210° F.	...	48	94
Viscosity index	...	95	94

Tests on lubricants from Run II:

	100 vis.	S.A.E. 10	Residue
Gravity	33.1	30.3	25.7
Viscosity at 100° F., S.U.	100	220	...
Viscosity at 210° F., S.U.	...	43	163
Color, N.P.A.	2	4	Dark
Flash, C.O.C.	340	400	545
Fire, C.O.C.	395	480	620
Pourpoint	90	100	115

The S.A.E. 10 oil was treated with 5 pounds of clay per barrel of oil and dewaxed with benzol-acetone mixture. The residue was treated with 60 pounds of acid and 40 pounds of clay per barrel of oil.

Tests on the lubricants after treatment:

	S.A.E. 10	Residue
Gravity	30.3	26.0
Color, N.P.A.	3	8+
Carbon residue, per cent	.1	2.37
Flash, C.O.C.	410	550
Fire, C.O.C.	480	625
Pourpoint, deg. F.	20	120
S.U. viscosity at 100	217	...
S.U. viscosity at 130	...	886
S.U. viscosity at 210	43	140
Viscosity index	94	89

Net yields (based on crude) of lubricants (loss in parenthesis):

	Run No. 1	Run No. 2
100 vis. oil	8.5 (1.5)	8.5 (1.5)
S.A.E. 10 oil	8.5 (1.5)	4.25 (.75)
S.A.E. 50 oil	4.7 (1.56)	...
Bright stock	..	6.75 (7.0)
Total	21.7	19.50

CRACKING STOCKS

The residue from Rodessa crude, after the gasoline and kerosene have been removed, is lighter in gravity than the residue from East Texas crude. Tests on a representative sample of residue from a topping unit:

Gravity	33.0
I.B.P.	480

(Continued on Next Page)

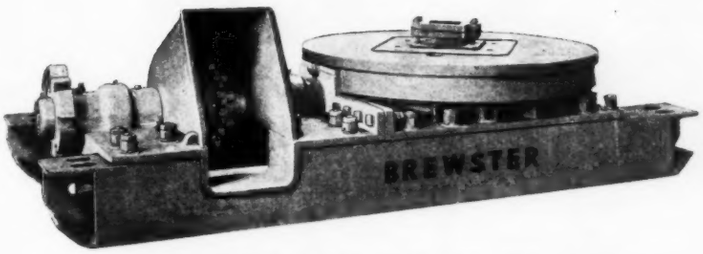
BREWSTER HEAVY DUTY EQUIPMENT

for tomorrow's needs!

Every newly discovered field, whether in the Gulf Coast, East Texas or North Louisiana, is being carried to greater and greater depths. Equipment that was sufficient yesterday, is entirely too light for today's drilling.

For twenty-five years Brewster Equipment has kept faith with drillers' needs, because our engineers and designers have kept a vigilant eye to the future.

The equipment pictured and described here is evidence of our farsightedness in the tomorrow of deep oil and gas well drilling.



THE BREWSTER NO. 11 ROTARY

Here is what we believe to be the most practical rotary to be found on any derrick floor. It has a tough, sturdy all-steel construction. This 25½" rotary machine is of the semi-oilbath type, with Bronzoid (a special alloy) pinion shaft bearings that can easily and economically be replaced. The bed is made an integral part of the bearing boxes and fitted on the skid-type base in such a way that makes possible a low table.

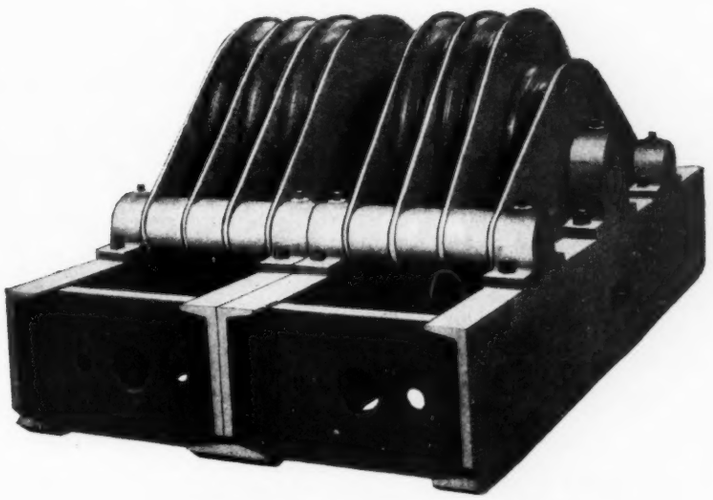
Let us tell you more about it in a descriptive booklet we'll be glad to send.

BREWSTER ROLLER BEARING STRAIGHT-FALL 36" TRAVELING BLOCKS

(Either 4 or 5 Sheave)

These modern blocks have been streamlined and perfectly balanced with a purpose—to give them a straight fall, without weave or wobble. The safety guards, rounded edges and counter-sunk bolts and pins reduce the hazards for the derrick man. The big 36" Manganese steel sheaves turn on ample sized American Roller Bearings, individually Alemite lubricated. The capacity is 400 tons.

Specifications and prices on request.



BREWSTER ROLLER BEARING STRAIGHT-LINE 36" CROWN BLOCKS

The same 36" sheave, American bearing assembly and lubrication method used in the Traveling Block is also used in the Crown Block. Handling and assembly of the Crown Block on the water table is made easier by our two-piece construction feature. Line-saving space plates are used between the sheaves. The capacity is 400 tons.

A card or letter will bring details and prices.

The BREWSTER COMPANY, Inc.

PHONE 3181 SHREVEPORT, LA.

Longview, Texas
313 E. Cotton St.
Phone 781

Lake Charles, La.
Broad & Shattuck
Phone 256

Rodessa, La.
Phone 29
Rodessa Exchange

New Iberia, La.
Phone 584

Houston, Texas
2000 Harrington St.
Phone C-6811

Export Office: Acme Well Supply Company, 136 Liberty Street, New York City

AN OSTRICH might do it this way!

An ostrich might look at bills for fuel and lubrication and then ignore the many other costs of owning and operating an out-moded prime mover.

But Oil Men know that only . .

PURCHASED ELECTRIC POWER

. . is covered by ONE BILL each month, and is always a bargain if you know alternative costs.

PETROLEUM ELECTRIC POWER CLUB

10 per cent at	540
20	575
30	603
40	650
50	680
60	728
Flash, C.O.C.	260
Pourpoint	80
Color	Green-black
Viscosity S.U. @ 100° F.	138

The yields from cracking this residue as calculated by Nelson's formula:*

Per cent 400 E.P. gasoline = 25+1.5(grav. feed-grav. tar)
= 25+1.5(33.0-11.5)
= 57% gasoline

The ultimate yields from the crude should be:

Straightrun gasoline (or naphthas)	36	400° F. E.P.
Kerosene	18	525° F. E.P.
Cracked gasoline	25.5	400° F. E.P.
Fuel (11.5 gravity)	13.5	
Gas and loss	7.0	
	100.0%	

DISTILLATE WELLS

Some of the Rodessa wells produce a light drip or distillate. The production from one well has the following characteristics:

Gravity, deg. A.P.I.	63.2
I.B.P.	102
10 per cent at	167
20	194
30	216
40	235
50	257
60	278
70	308
80	348
90	406
95	457
Endpoint	500
Recovery	97.5
Color	23
Corrosion	Negative
Doctor	Negative

Such a distillate yields about 80 per cent of 380-endpoint gasoline (47 octane number) and 18 per cent kerosene.

GAS

The gas from the separators is relatively dry. A representative sample has the following analysis:

	Per cent by gas volume
Methane (and inerts)	93.3
Ethane	3.4
Propane	1.3
Butanes	1.08
Heavier	.92
	100.00

Gallons of butane per M cubic feet = .35
Gallons of heavier per M cubic feet = .37

With a butane recovery of 30 per cent in the natural gasoline, the yield of recoverable gasoline is 0.53 gallons per 1,000 cubic feet.

The gas from the gas wells contains less recoverable gasoline than does the gas from the oil or distillate wells. A representative sample has the following analysis

	Per cent by gas volume
Methane (and inert gases)	95.74
Ethane	2.02
Propane	1.25
Butanes	.65
Heavier	.34
	100.00

G.P.M. of butanes, .21
G.P.M. of heavier, .12

With 30 per cent butanes in the stabilized natural gasoline, the total recoverable gasoline is .17 G.P.M.

SUMMARY

Rodessa crude is a high gravity paraffin-base oil. A large yield of low-octane gasoline and a large yield of high-quality kerosene can be obtained.

No chemical treatment is required on the gasoline, naphthas or kerosene to meet sulfur, corrosion or doctor specifications.

A small yield of high viscosity index lubricating oil can be produced. Due to the high treating and dewaxing loss, it does not appear profitable to make a bright stock from this crude.

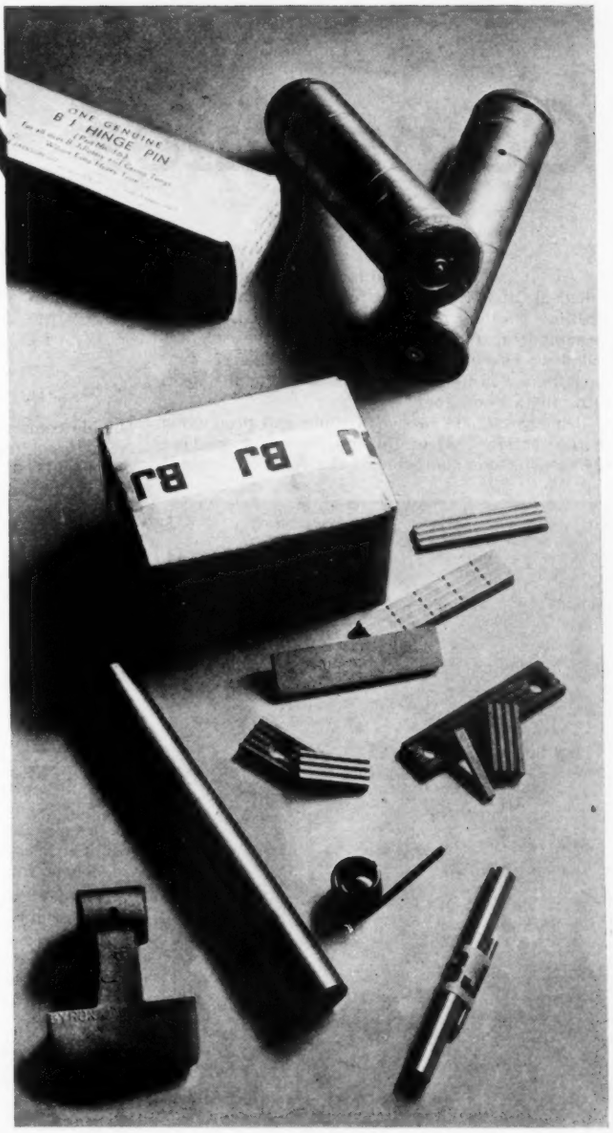
A relatively high yield of cracked gasoline can be made.

The gas-oil fraction has too high a pourpoint to be sold as commercial furnace oil or diesel fuel.

The octane number on the gasoline produced from cracking the residue is slightly lower than that produced from East Texas residue when cracked under about the same conditions.

*Petroleum Refining Engineering, Nelson, page 316.

DANGER!



DON'T TAKE CHANCES

of decreasing the efficiency of BJ Tongs and BJ Elevators by using "bootleg" or homemade replacement parts.

A tong die which does not take a sure, safe grip is dangerous—a nail used to hold on the elevator latch can easily drop out high in the derrick and injure an operator, but . . .

Another danger is to your pocket-book! With imitation parts you cannot hope for "new elevator" performance—you cannot expect long life from tong dies—you slow up the handling of tongs and elevators and subject them to excessive wear by using parts which do not fit accurately!

Genuine BJ Replacement Parts are Better—are Safer—Cost Less in the Long Run—Why Take Chances?

LUBRICATED HINGE PINS

A standard grease gun connection in the top forces lubrication to follow the spiral-cut grooves, and insures simple and complete lubrication. Boxed and sealed for your protection!

GENUINE TONG DIES

Only BJ can make tong dies which fit accurately and "stand the gaff" of speed and rough usage found in present day drilling operations.

All types are packed in sealed boxes to guard you against imitations. In the BJ Catalog, or on Page 307 of the 1936 Composite Catalog you will find details of remarkable savings when you buy in quantity.

ELEVATOR REPLACEMENT PARTS

BJ Latches—Latch Pins and Hinge Pins are made of steels suited to the service they must perform. They fit with an exactness which insures "new elevator" performance. BJ Latch Springs are correctly made of proper materials and lacquered to prevent deterioration. Savings here, also when you buy in dozen lots!

BYRON JACKSON CO.
AND SUBSIDIARY
FORT WORTH • LOS ANGELES • NEW YORK

LOOK ON PAGES 306, 308 AND 336 OF THE 1936 COMPOSITE CATALOG

Genuine

THE AMERICAN PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION
MEMBER

REPLACEMENT PARTS

Cooperative Core Correlation Adopted by Shreveport Companies

Interior of core distributing depot

The need to combine both paleontological and lithological correlation as deeper drilling became prominent in North Louisiana prompted the formation of a cooperative core distributing base in Shreveport, La., which is now participated in by 14 of the major companies operating in this territory.

During the 30 years of drilling and production in the shallow beds of Upper Cretaceous age here the fossiliferous character of the formations made paleontological logging and correlation quite easy and reliable. Systematic sampling and coring was seldom practiced.

Cores taken every 10 feet from one well ready for distribution at central depot

The wildcat campaign having Lower Cretaceous beds or below as the objective, which followed discovery of prolific oil accumulation at Rodessa in the Lower Glen Rose, presented new problems in the correlation of formations in this territory, due to the scarcity or absence of reliable fossil markers. As a result, all operators are turning to lithological logging, with the assistance of fossil identifications, and have adopted the policy of sampling or coring every 10 feet in all important wildcats, and coring every change of formation noted at critical points.

For some time there was little assurance that outside companies would receive cores or cuttings from these important wildcats, as no cooperative agreement had been reached. Representatives of the various companies met to consider suitable arrangements for obtaining this information; a committee was appointed to study the situation, and as a result recommendations were made and accepted for the establishment of the present central core distributing agency. All companies will be assured of receiving a complete set of samples from all wells drilled by participating companies in the Arkansas, North Louisiana, and East Texas border counties.

CORE WAREHOUSE

A central warehouse has been constructed for this purpose in Shreveport, and all companies share in employing an experienced man to receive, sort, log, divide, and distribute the samples, which are brought into the depot by the various companies' scouts. Sacks and three-trough core boxes are provided here for this purpose.

As an example, when a new wildcat is begun, arrangements are made for the scouts to bring in cuttings or cores for each 10 feet of drilling. The representative at the agency logs, divides and sacks each sample into 16 portions, and places them in each company's respective bin, to be later picked up for their individual examination and logging. Throughout the portion of the important tests that are continuously cored, each company receives a sample of every change in formation, although at times they may be only from 2 to 3 inches thick.

Should the drilling company, for any reason, desire to withhold samples from an important test until after its completion, it reserves the right to do so under the terms of the cooperative agreement.

CENTRAL CORE DEPOTS

Central core depots are operated in other areas, but none on such a cooperative basis as the one serving the Arkansas-Louisiana-Texas territory. In some, samples are sold for a stipulated sum, operators taking whatever they desire. In others, the scouts deliver and divide the samples themselves. The arrangement now employed at Shreveport is believed to afford quite a saving to each participant, and at the same time assures all of them a representative core record of each and every well drilled.

Atlantic, Arkansas-Louisiana, Standard of Louisiana, Sinclair, Stanolind, Shell, Magnolia, Phillips, Texas, United, Pure, Devonian, Standard of California, and Amerada companies comprise the present participants in this cooperative core depot.

Continuous cores taken from one well, as they are brought into central depot for distribution

and now the NEW!

REED DK

The Culmination of

the new REED DK ROCK BIT

WITH THE COMBINATION BALL THRUST AND ROLLER BEARING ASSEMBLY

The New REED DK DRILLING BIT

is the culmination of a five year intensive and progressive development in the anti-friction roller bearing cutter drilling bit, during which time more than one thousand different cutter assemblies marked the path of progress.

REED ROTARY DRILLING TOOLS

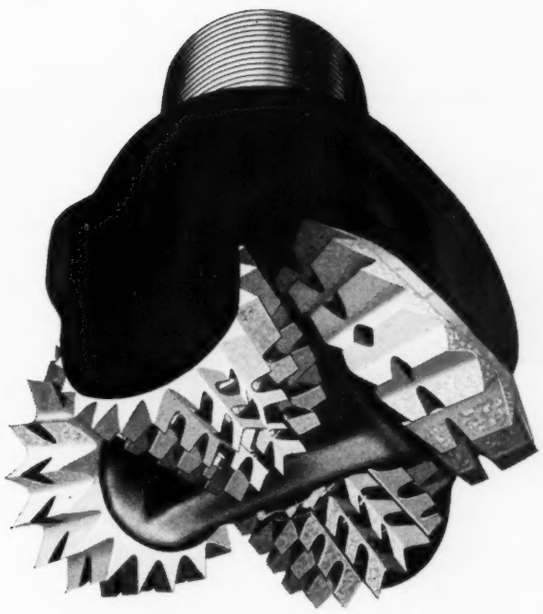
SPEED-ECONOMY-DURABILITY

REDUCE THE "COST PER FOOT" ON YOUR DRILL PIPE WITH THE BIT THAT REQUIRES LESS WEIGHT

Progressive Development

The REED DK 1

A GENERAL PURPOSE BIT ESPECIALLY ADAPTED TO DRILLING BROKEN FORMATIONS, SUCH AS: ALTERNATE HARD AND SOFT LAYERS OR STRATA; SHALES; LIMESTONES; CHALKS, ETC.



The REED DK 2

FOR HARD AND TOUGH FORMATIONS SUCH AS: HARD LIMESTONE; SAND ROCK; HARD SHALES; AND HARDER FORMATIONS THAN THOSE ON WHICH THE DK 1 BIT IS GENERALLY USED.

The REED DK 3

FOR CUTTING HARD, WELL CEMENTED SANDSTONES; VERY HARD LIMESTONES, ETC.

REED ROLLER BIT CO.

LOS ANGELES — HOUSTON, TEXAS — OKLAHOMA CITY — NEW YORK

ROCKY MOUNTAIN, MID-CONTINENT AND GULF COAST DISTRIBUTORS FOR MARTIN-DECKER PRODUCTS

Rodessa Pool Quickly Served by Six Trunk Pipe Lines

Although no pipe line outlet was available when oil was discovered at Rodessa, the bi-state pool was quickly served by six trunk lines having a combined capacity of about 225,000 bbls. daily. Only one line was built specifically to make this possible. All others were favorably situated geographically to permit the short extensions, and where necessary various means were employed to increase capacities and provide for the ample outlet.

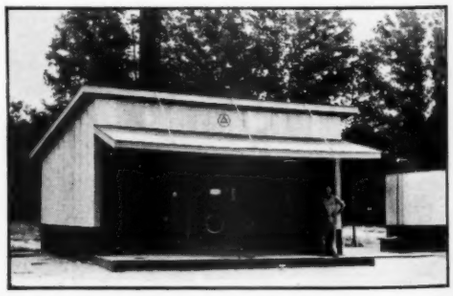
The five lines that were extended into the field had been serving the declining Caddo, Pine Island, Haynesville, Homer and Cotton Valley fields of Louisiana, and the El Dorado and Smackover fields of Arkansas. The demand for an outlet at Rodessa immediately enhanced the remaining value of these lines, and although certain of them were considered to be approaching the extent of their needed life, they now have been adapted to the new loads and are meeting a service demand that probably will continue for many years hence.

Outside of gathering systems and 10- to 20-mile extensions, the only new work done to establish this six trunk line outlet, was the construction of the East Texas Pipe Line Co. 8-inch screw line to Longview (later sold to United Gas Public Service Co.), and the addition of a pipe line station to Magnolia Pipe Line Co. Smackover-Beaumont line extension into Rodessa.

After laying 23 miles of new 8-inch welded line from a point on the El Dorado-Fultner line into Rodessa, Magnolia Pipe Line Co. constructed a two-unit electrical pump station having a daily capacity of 20,000 bbls. One Prescott 5½ by 24-inch pump driven by a 200-horsepower Westinghouse motor, V-belt drive, provided a 13,000-bbl. daily outlet. Another Prescott 5 by 18-inch pump, V-belt driven by a 150-horsepower General Electric motor, provides the additional 7,000-bbl. daily outlet. This station is now taxed to its full capacity, and is pumping a distance of 60 miles to Fultner, Tex., against a pressure of about 700 pounds. Only very light oil such as that produced at Rodessa would permit pumping such volumes against this pressure with the present equipment installed. Automatic Mercoid safety switches are provided to shut down the station at a critical pressure of 750 pounds. As Magnolia continues to develop its holdings in the field, it is planned either to add additional units at this plant or install another intermediate booster station at Dixie, La., the junction point on the main line. The present station is handled by one man per six-hour tour, who takes care of gauging, checking of motors and pumps, inside and outside valve work, and incidental duties.

The automatically operated electrical field station designed by Magnolia pipe line engineers is the feature of its electrical system in the field, and as it receives its first trial at Rodessa, it is being watched by all pipe line operators with considerable interest. To date its operation has been considered quite satisfactory. The assembly is situated in a 12 by 12-foot concrete pit, about 8 feet deep, to assist in the gravitation of oil from lease tanks. The oil from the tanks is drawn through an 8-inch intake line into a small receiving tank, an integral part of the unit, by a Nash Hytor vacuum pump driven by a direct-connected three-phase, 60-cycle, 224/440 volt Continental motor. Two floats operate in the receiving tank to control the operation of this suction pump, causing it to come to a stop when the contents of the tank rises to a certain level, and the other to start it again when the fluid level nears bottom.

The oil is picked up from the receiving tank by the driving agent, an automatically controlled Worthington pump propelled by a direct-connected three-phase, 60-cycle, 220-volt General Electric motor, and pumped to the working tanks at the main line pump station about 6 miles away. The floats controlling this unit of the assembly respond to the supply and demand in and from the receiving tank, as it shuts down the motor when oil gets at a critical low point, and starts it up again when the level reaches the desired higher level.



Oil field boiler in pipe line service

Both motors receive their control from specially adapted Mercoid switches.

This automatic field station has a daily capacity of 25,000 bbls., but is now only operating one six-hour tour daily, requiring the services of one attendant. It is situated near the Texas line in the field, and moves oil to the main electrical pump station just south of the Rodessa townsite.

In addition to the usual problems involved in the selection of the proper type power to employ in main line stations, Magnolia Pipe Line Co. was confronted with the determination of whether or not it would be desirable to ignore the cheap and

WILSON SUPPLY COMPANY Store

AND Stock OF WILSON-SNYDER PUMPS AT RODESSA

As is the case in every other Gulf Coast field, operators in the Rodessa field are demanding Wilson-Snyder Pumps. And as usual, Wilson Supply Company is on hand with adequate stocks to meet the demand. (See Photo).

Operators in all Northern Louisiana fields, as well as Rodessa, will find Wilson Supply Company's Rodessa Store a dependable source of supplies.

"GET IT FROM WILSON'S"

Exclusive Gulf Coast Distributors for:

Wilson-Snyder Pumps
American Cable Tru-lay *Pre-formed* Wire Rope
Kewanee Boilers
Sievers Reamers
Driftmeter Jr.
Gray Swivel
Nixon Ferrill Gas Lift
Bowen Pack-off and Releasing Overshot
Nixon Tubing Slip and Spider

WILSON SUPPLY COMPANY

1412 Maury Street, Houston.

Branches:— Barbers Hill; Kilgore; Gladewater; Bay City; Victoria; Pierce; Talco and Corpus Christi, Texas; Lake Charles; New Iberia; and Rodessa, Louisiana.

plentiful supply of gas and water, or the high-gravity crude available for fuel purposes, and resort to the use of manufactured power purchased commercially.

This decision was prompted by the uncertainties connected with Rodessa field in its early life, indicating the advisability of lowest initial investment; by the apparently variable load demand

Steam pumps on gathering system

especially during the development stages; by the fact that this was to be an outpost station and repair parts or mechanics would not be readily available; by the fact that a large camp was to be built nearby and current for this purpose could be obtained through the same power account at much lower costs; and by the lower maintenance ratio (claimed to be from 3 or 4 to 1) in favor of manufactured power.

Arkansas-Louisiana Pipe Line Co. had been operating a 4-inch line from Caddo to its Bossier City refinery for many years. The heavy Caddo oil was being moved by two United steam straight-line pumps, equipped with 3½-inch solid metal pistons. Steam was supplied from one 75-horsepower oil field boiler. About 2,500 bbls. daily was being moved in this manner, operating against pressures as high as 1,000 pounds. These small pistons were satisfactory in handling the heavy oil against such pressures, but would not permit any additional volume to be handled. When the demand to move Rodessa crude arose, and after this company built its short line from Oil City into the field, an additional boiler was added to the plant, two Denver-Gardner booster pumps, having a 14 by 15 end and 5 by 12 fluid end, were installed to increase the daily capacity to about 5,000 bbls. Oil from the Rodessa field 13 miles away was boosted by individual steam pumps on the various leases. The movement of light Rodessa oil served to cut out the large accumulation of paraffin in the line that had deposited from the heavier Caddo crude, and assisted greatly in reducing the line pressures. The reduction in viscosity and the increased capacity of the larger size piston pumps worked to permit the 4-inch line to double its daily oil movements.

In the construction of the East Texas Co. line to Longview, two second-hand steam driven turbines direct-connected to centrifugal pumps were employed as driving agents. This early type of equipment was selected for use because of the free gas fuel and plentiful supply of good water, and the availability of low initial cost second-hand equipment. This plant has a daily capacity of about 30,000 bbls., although it now handles about 6,000 bbls. from 29 connections. At one time it moved about 20,000 bbls. daily from 13 wells.

The Standard Pipe Line Co. trunk system from Oklahoma fields, extending southward through DeQueen, Ark., serving the Baton Rouge, La., refinery, gave Rodessa its first outlet by laying an 8-mile extension from its semi-diesel station at Ida to the discovery well. The field has now extended almost to the town of Ida, approximately along a path in which the original line was laid. As this line was not operating to capacity it had no difficulty in handling the Rodessa load. One hundred and seven wells are now served by the line, having a daily run of about 25,000 bbls.

Gulf Pipe Line Co. greatly relieved the situation early in 1936 as new wells were being rapidly completed, when it extended its trunk line 20 miles east from Potters Point station in the Caddo field northward into the Cass County side of the field. Steam powered field pumps move the lease oil to the main line station at Potters Point. The declining Caddo field permitted sufficient available capacity to handle a large portion of Rodessa oil and today this line, with 50 connections, is handling about 12,500 bbls. daily.

Texas Pipe Line Co. found little trouble in entering Rodessa through the construction of a 15-mile extension from its line serving the old Caddo and Pine Island fields which was operating far below its rated capacity. This line now has 10 connections, with a daily withdrawal of about 2,500 bbls.

"Petroleum Dictionary"

The second edition of Hollis P. Porter's "Petroleum Dictionary" is just off the press. This book has been revised and checked and is a great improvement over the first edition. New terms have been added and every effort made to include all references of interest to the worker in office, field or factory. Its use should not be confined to the oil industry for it will prove an aid to the readers of trade papers or technical articles who may not be directly connected with this industry. Technical words and terms used in the geological, chemical, mechanical, electrical and civil engineering industry are included.

The book contains 253 pages and is 6 by 9 inches in size, bound in blue cloth with gilt lettering and makes an attractive volume for library or desk.

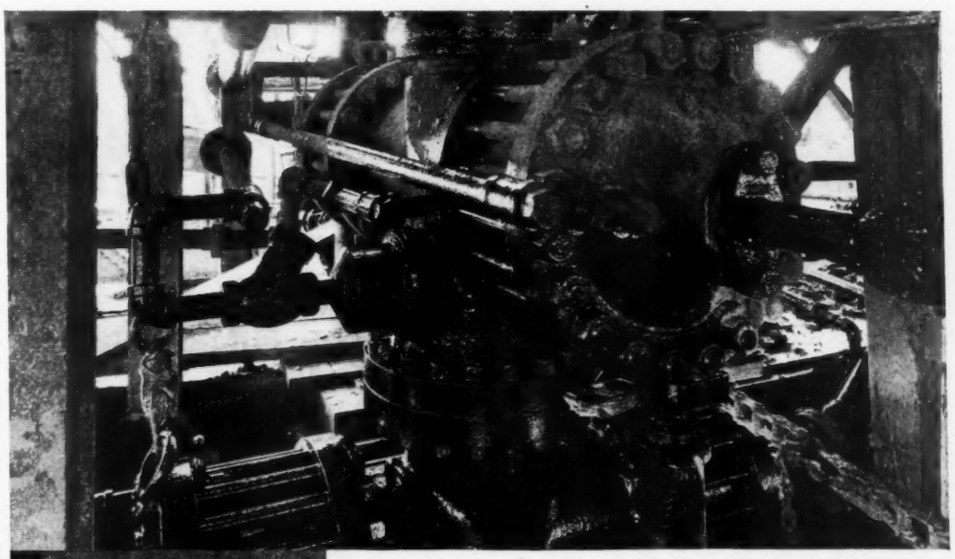
"Petroleum Dictionary" may be purchased through the Book Department of The Oil and Gas Journal at the regular established price of $3, express prepaid, and a copy will be forwarded promptly upon receipt of check or money order for that sum. Where no payment accompanies the order, the book will be sent express c.o.d.

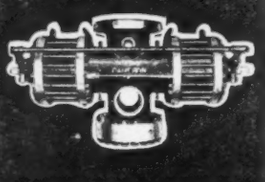
Shelby County Block

SHREVEPORT, La., Oct. 12.—Stanolind Oil & Gas Co. is reported to have completed the assembly of 1,800 acres in a solid block and 2,000 more acres scattered north of Center, Shelby County, in the McKelvey, Scarborough and Forsythe Surveys.

Three geophysical crews are known to be working in the county. They are Sun, shooting between Joaquin and Shelbyville; Texas Co., working 2 miles north of Center, and Amerada's crew near Joaquin.

9,843 FEET OF 15 POUND MUD STARTED TO UNLOAD . . *BUT*





FEATURES

1. Instant pressure opening and closing.
2. Remote control from derrick floor.
3. Independent ram closing and locking screws.
4. Self-feeding ram packing elements.
5. Self-centering pipe rams.
6. Ram collar recesses hold pipe up or down.
7. Blind rams or pipe rams interchangeable.
8. Integral flowline outlets and body flanges.
9. . . . 22 other outstanding features.

THIS CAMERON HOOK-UP IS HOLDING THE 2400 LB. SURFACE PRESSURE WITH EASE

● When the drilling crew started out of the drill pipe with a wire line core barrel, this 9,843-foot Chambers County well started to unload its 15-pound drilling fluid. Shale chased the wire line barrel up the drill pipe approximately 100 feet, then stuck it. Cameron Type SDA Blowout Preventer rams were closed around the drill pipe, and engineers on the job estimated a casing pressure of 2,400 pounds at the surface after testing through choke outlets. When wire line barrel was finally freed by use of 1¼-inch drill pipe inside of the 4½-inch drill pipe, operated through Cameron High Pressure Control Heads, a pressure of 2,100 pounds built up inside the drill pipe, as indicated by a pressure gauge on the control head hook-up.

● The above picture shows the Cameron blowout preventer hook-up holding 2,400 pounds pressure with ease. Hook-up shown includes two 13⅜-inch Cameron Type SDA Preventers, the lower preventer equipped with blind rams to serve as a master gate valve, and the upper preventer equipped with pipe rams. There is no more positive, dependable or reliable blowout preventer equipment available than Cameron Type SDA Pressure Operated Preventers.

CAMERON IRON WORKS, INC.
711 MILBY STREET HOUSTON, TEXAS

EXPORT OFFICE: 74 Trinity Place, New York, N. Y.
MIDLAND: W. P. (Red) Knight - - - - BEAUMONT: C. A. Muncey
OKLAHOMA AND KANSAS: Carson Machine & Supply Company

IN 12 HOURS

WE CAN FURNISH YOU *ANY* SIZE LINER FOR *ANY* SIZE PUMP!!

We carry one of America's largest stocks of blank forgings for the manufacture of reduced and specially made liners.

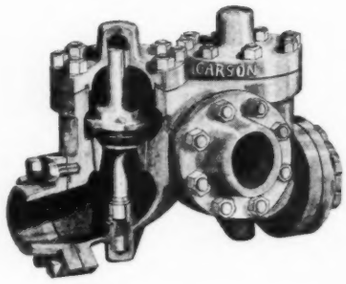
RED BAND Pump Liners

STANDARD AND SPECIAL BORES FOR ALL STANDARD MAKES OF SLUSH PUMPS

You can depend on two things when buying Pump Liners from Carson—First, that they are the very best liners available regardless of price. Second, you are assured of quick, complete service that reduces lost motion to almost naught.

Red Band Pump Liners are made of best grade alloy forged steel. The collars are shrunk into place and welded; all fitted surfaces are dimensioned to within 2½ thousandths of an inch; and bores are ground to nickel plate finish. Standard bores are carried in stock at all times. Special bores are made to specifications for immediate delivery.

Don't forget—when you need Pump Liners, especially if you want them in a hurry, call Carson and enjoy real service 24 hours every day.



CARSON SLUSH PUMP MANIFOLD VALVE assures better service. Quickly installed; perfect sealing and positive switching; removable valve and seat; easily repaired. Ask for full details—now!

CARSON

MACHINE & SUPPLY CO.

OKLAHOMA CITY, OKLA. DRAWER 1356 PHONE 3-6441

Watch for announcement of equipment now in process of development

Heavy Oil Demand Requires Extensive Drilling

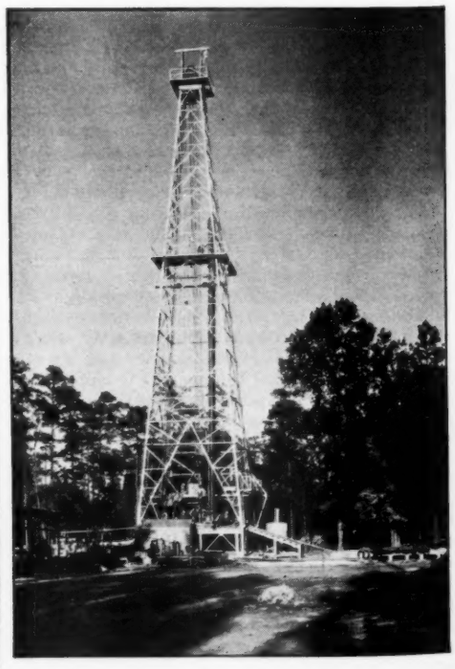
In its October review Carl Pforzheimer & Co. says the heavy demand for oil requires extensive drilling.

"To supply the indicated demand for petroleum products in 1936, the American petroleum industry will have had to produce in excess of a billion barrels of crude oil or a daily average of approximately 3,000,000 bbls. In order to maintain the present status of our proven reserves, the industry must continue to find oil at about this same rate. In only one 10-year period (1921-1930) of its 75-year history has the industry been successful in discovering an average of a billion barrels a year. This does not indicate that the country is faced with an oil shortage, but it explains the expansion of drilling activity resulting from the desire of most oil companies to fortify their position with regard to crude oil reserves and to obtain the benefits normally accruing to those companies producing the major part of their requirements.

"The current reserves of recoverable oil from known fields in the United States are variously estimated at from 12 to 14 billion barrels. These estimates are based on the amount of oil believed to be extractable by existing methods of production. While it is admitted that some methods may later be devised to recover more oil, such methods will undoubtedly be more costly and the increased value of the oil produced thereby, would tend to limit its commercial utilization. Although the estimated reserve of 14 billion barrels, if withdrawn at the 1935 rate of production would be equivalent to about 15 years supply, it would be physically and mechanically impossible to produce to depletion within that time the full amount of the estimated known reserves. The productive life of these fields will extend over many years, for as a field approaches the end of its economic life, the amount of oil which can be taken out in a year gradually declines. This condition is best illustrated by the large number of wells in the older fields of the United States which now produce only a fraction of a barrel of oil per day. The same thing is shown by the fact that of the hundreds of producing oil fields in the United States, approximately 50 per cent of our current production comes from about a dozen of the more recently discovered fields.

"Every estimate of our crude oil reserves made by competent authorities up to 1925 has been exceeded by actual production since that time, in addition to which we shall have a substantial known reserve. This experience has led to the unfounded belief that our petroleum supply is

✣



In a sylvan setting

unlimited. Average annual rate of discovery increased gradually from 1859 to 1925, when, as a result of the introduction of geophysical methods of finding oil, discoveries increased sharply. It has been estimated that during the five years 1926-1930, the industry found more than a third of all the oil it has ever found and nearly all of its present major fields, including Yates, Kettleman Hills, Oklahoma City and East Texas. Notwithstanding the continued application of advanced finding technique, rate of discovery for the period 1931-1934 declined to the lowest point in nearly 20 years. Despite the upturn in discovery rate in 1935 with the bringing in of such fields as Rodessa and Anahuac, withdrawals from our proven reserves in the past five years were greater than the amount added by the discovery of new fields.

"Indicated domestic demand for crude oil during the first seven months of 1936 totaled 618,850,000 bbls., an increase of approximately 12 per cent above the similar period of 1935. The greater demand for crude chiefly reflects the increased consumption of motor fuel which during the first seven months of the current year established a new record for any corresponding period totalling 267,653,000 bbls. or about 11 per cent higher than in same period of last year, the previous peak. Indicated domestic demand for crude petroleum for the period from January 1, 1926, to July 31, 1936, totaled 9,823,850,000 bbls. and compared with total domestic production of 9,550,703,000 bbls. during this period. The deficiency of 273,147,000 bbls. in domestic production was made up in part by an excess of 239,945,000 bbls. of imports over exports and a net reduction during this period of 37,430,000 bbls. in stocks of crude petroleum.

"To discover and produce the supply of oil that has been required to the present time, it has been necessary to drill an average of about 20,000 wells annually. The large number of failures, which have averaged approximately 27 per cent of the total number of wells drilled in recent years, illustrates the uncertainties inherent in the search for petroleum deposits. While it is reasonable to assume that productive fields will be discovered in the future—some possibly as prolific as any now producing—the number and volume of oil that may be developed in them is conjectural.

Motorist in Other Lands Must Pay Big Taxes, Too

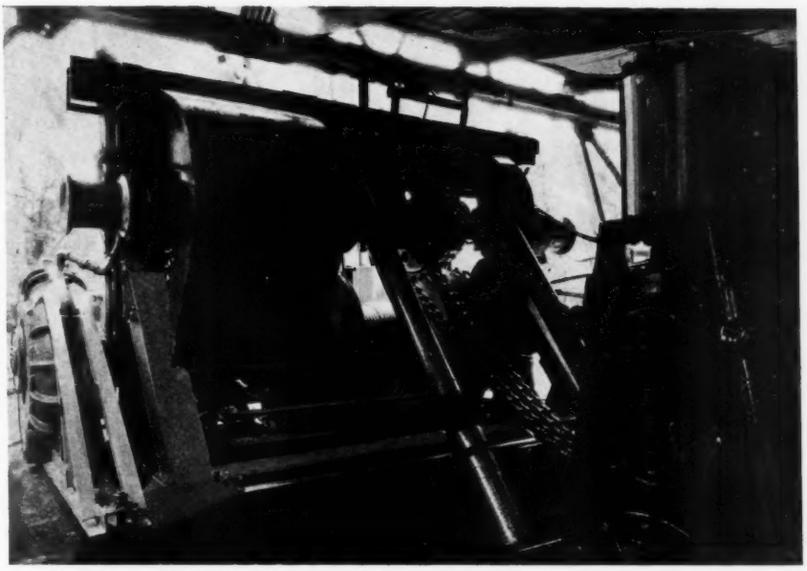
The tax-ridden motorist in the United States may extract some comfort from examination of world retail prices and taxes on gasoline, kerosene and motor lubricating oils, just issued by the Bureau of Mines. If he were living in Rome, for instance, he would pay $1.26 a gallon for his gasoline, this including 41 cents for the gasoline itself; exactly twice that, or 82 cents, for government tax, and 3 cents import duty.

Prices and taxes of regular-grade gasoline in some representative cities on or about July 10, 1936, follow, the price including the tax and the tax in each case including any import duty: Vienna, 41.7 cents (tax 23.2 cents); Buenos Aires, 23.6 cents (tax 10.2 cents); Quebec, 23.3 cents (tax 5 cents); Havana, 28 cents (tax 17 cents); Cairo, 32.6 cents (tax 17.9 cents); Paris, 56.3 cents (tax 39.8 cents); Berlin, 53.4 cents (tax 30 cents); Tokyo, 17.3 cents (tax 3.6 cents); Mexico City, 18.9 cents (tax 8.4 cents); Warsaw, 47 cents (tax 14 cents); London, 31.5 cents (tax 13.9 cents); Bombay, 29.5 cents (tax 20 cents); Stockholm, 26.1 cents (tax 9.7 cents).

Suit to Move Crude Is Upheld

AUSTIN, Tex., Oct. 12.—East Texas Refining Co., which has been seeking to move 55,000 bbls. of oil from Louisiana to Longview, this week obtained a favorable ruling from the third court of civil appeals. The court ruled that a federal court judgment holding the oil has been produced in violation of Louisiana conservation laws was not admissible as a defense by the Texas Railroad Commission against the company's suit for tenders to move the oil. The commission had declined to act on applications for tenders and the company obtained injunctions compelling issuance and restraining the commission from interfering with movement of the oil.

EXPERIENCED CREWS and FINEST EQUIPMENT
Now Available FOR DEEPEST DRILLING
IN RODESSA, *Louisiana and Texas*



With the opening of our office in Shreveport we bring unexcelled experience in deep oil and gas well drilling, backed by the best and finest heavy drilling equipment in this territory. Much of our equipment is specially designed and unitized to save rigging time and to speed up every drilling operation.

Let us show how we can save you money as well as "sell" you a straighter hole—all in record time.

SOUTH CENTRAL DRILLING COMPANY

W. F. Buaas, Pres. — B. H. Dye, Vice-Pres.
F. L. Shepherd, Secy.-Treas. — T. M. Gavin, Asst.-Secy.

Affiliated with The Taft Well Drilling Company of California

PHONE 2-5492 — 539 RICOU-BREWSTER BLDG.
SHREVEPORT, LA.

ROBERT·E·STANTON
PETROLEUM ENGINEERS & CONTRACTORS

LIQUID AND VAPOR-PHASE CRACKING
SOLVENT REFINING OF LUBE OILS
CHEMICAL BYPRODUCT PLANTS
GAS POLYMERIZATION UNITS
PIPELINE CONSTRUCTION
GASOLINE RECOVERY
ASPHALT PLANTS
DISTILLATION
SURVEYS

"a specialized service for the small refiner"

MIDLAND SAVINGS BANK BUILDING
DENVER ••• COLORADO

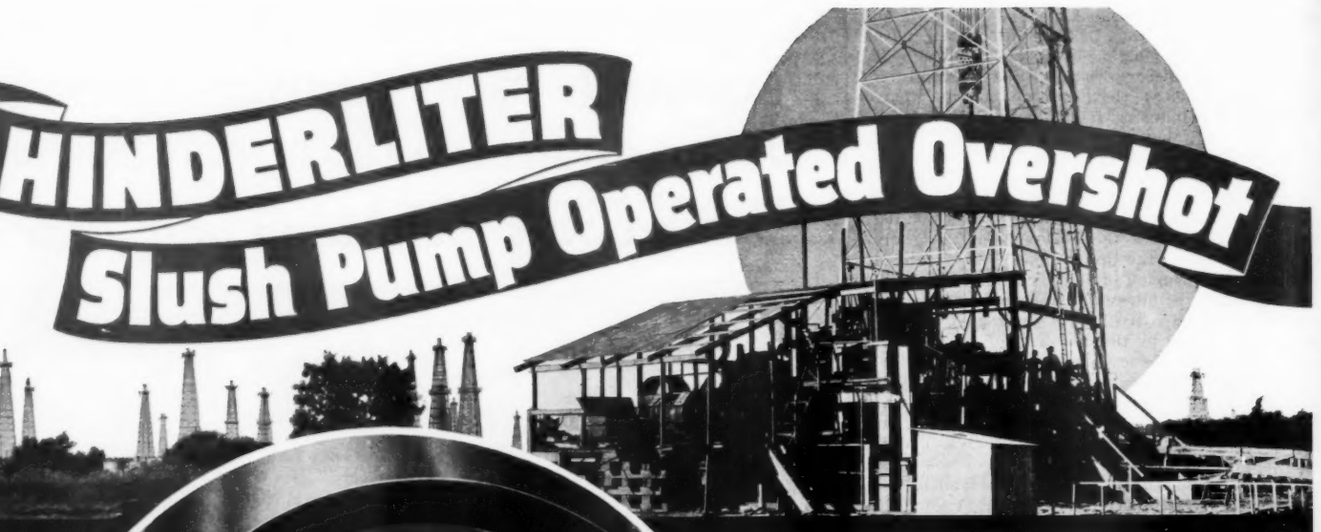
CORROSION AND HEAT

Those arch enemies of the Oil-Gas Industry can be conquered by use of correct alloy steels plus our scientific methods of Drop Forging. Write or wire for Free Engineering Aid.

ATLAS DROP FORGE CO.
LANSING, MICHIGAN

ATLAS
DROP FORGINGS
2 ounces to 500 pounds

HINDERLITER
Slush Pump Operated Overshot



The Hinderliter Overshot is a departure from the conventional type of rotary fishing tool.

The Hinderliter Overshot is comprised of: Body, Piston, Piston Ring, Slips, U-Cup, and Finger. The engagement is effectuated by three slips, which comprise a circle. This circle is an integral part of the engaging mechanism which is actuated by the flow of the mud laden fluid against a piston type mechanism. The flow of the mud laden fluid is regulated by the slush pumps.

The slip engagement around the fish is accomplished by the means of the weight of the column of mud laden fluid plus the applied pump pressure contained in the drill pipe as it progresses in the process of circulation.

Disengagement is obtained upon cessation of pump pressure plus a slight movement of the drill pipe. Slips are not destroyed by heat, energized by friction, created in the practice of spinning the conventional type overshot to effect release.

The Hinderliter releasing and circulation overshot is peculiarly adapted for fishing purposes and is used in connection and combination with mills, shoes, hooks, etc. Patented.

HINDERLITER TOOL CO., TULSA, OKLA.

Sold by Supply Stores

HINDERLITER

SERVICE ON NEW FIELDS

RODESSA, LOUISIANA-TEXAS

Compiled by The Oil and Gas Journal, October 3, 1936

Approved name:

Rodessa oil and gas field.

Geographic location:

The field is situated in the northwest corner of Caddo Parish, Louisiana, and northeast corner of Cass County, Texas, having an overall length of 18 miles running in the northeast southwest direction.

Rodessa, Louisiana:

The town of Rodessa, after which the field was named, is now practically in the center of the field. Its population has increased from 50 to 2,500 in slightly over 1 year. Eight hotels now serve the town, with 32 retail stores, 11 restaurants, one emergency hospital, two churches, one newspaper, "The Rodessa News," and one railroad, the Kansas City Southern, which now operates about 25 miles of switching line within the field. Due to the fact that Rodessa is an unincorporated town, state banking laws prohibit the establishment of a bank here. No fire department is available for the same reason. Efforts are now underway to incorporate the town of Rodessa.

Principal towns and cities nearby:

Vivian, Louisiana, 8 miles south; Shreveport, 40 miles south. Atlanta, Texas, 15 miles north; Texarkana, Texas, 40 miles north. Ida, Louisiana, 9 miles northeast.

Contractors:

Approximately 15 drilling contractors have done work in the field, 10 trucking contractors serve the field, with three rig building companies and miscellaneous construction companies.

Power:

Southwestern Gas and Electric Co. supply electricity for the field. Arkansas-Louisiana Gas Co. supply domestic gas.

Water supply:

The Rodessa water system, and all requirements for operational purposes, are supplied from wells drilled to the 300-foot prolific water horizon.

DEVELOPMENTS

Early history:

The first commercial production of gas was obtained from the R. W. Norton No. 1 Hill well, section 28-23-16, in 1930 at a total depth of 5,506 feet in the Hill gas sand, with a daily open flow capacity of 11,500,000 feet. Many shallow wells had been drilled and abandoned in this area previous to this gas discovery. Twenty-one gas wells were drilled to the Hill horizon prior to the discovery of oil on July 7, 1935.

United Gas Public Service Co. No. 1 I. L. Young, section 21-23-16, was drilled about 200 feet down the structural dip in search of oil accumulation, and discovered the first oil production in the Young sand at a total depth of 6,048 feet. This discovery well flowed an initial production of 5,775 bbls. the first 24-hour period through two 1-inch chokes.

Completions to date:

Total completions for the field number 358, the Louisiana side having 294 and the Texas side 64. Only two dry holes have been drilled, both in Cass County, Texas. Seventeen of the Louisiana wells produce gas and distillate only.

Present drilling operations:

Wells drilling or rigging up now total 84, of which 41 are in Louisiana and 43 in Texas.

Present daily average production:

For the week ending October 3, 1936, the daily production averaged 71,800 bbls., the Louisiana side accounting for 56,385 bbls. per day while the Texas side flowed 15,415 bbls. per day. (This includes the distillate production from 17 Louisiana wells.)

Accumulated production:

Accumulated oil and distillate production to September 1, 1936, amounts to 14,304,912 bbls. Of this amount 13,491,444 bbls. was produced in Louisiana and 813,468 bbls. in Texas.

FUTURE DEVELOPMENT

Proven area:

It has been estimated that there are approximately 25,000 proven acres within the confines of the present limits, 8,000 of which are in the gas-distillate area (that portion between the fault and the point of gas-oil contact).

Undrilled locations in proven area:

Assuming a spacing pattern of one well to 20 acres for the present proven but undeveloped portion of the field (although it is probable that certain sections will be more densely drilled) there remains approximately 600 open locations yet to be drilled within the present proven limits of the oil area of the Rodessa field.

Estimated number of completions during next 12 months:

A great portion of the proven but undeveloped area, particularly in Cass County, Texas, is tightly held by major operators, and development here may reasonably be expected to be slow and methodical. At the present rate of development, from 350 to 450 wells will be completed during the next 12 months.

Rodessa reserves:

Estimates for both flowing and pumping life range from 7,500 to 20,000 bbls. per acre, depending upon thickness of sands, saturation, structural position, proximity to low pressure areas, etc.

DRILLING

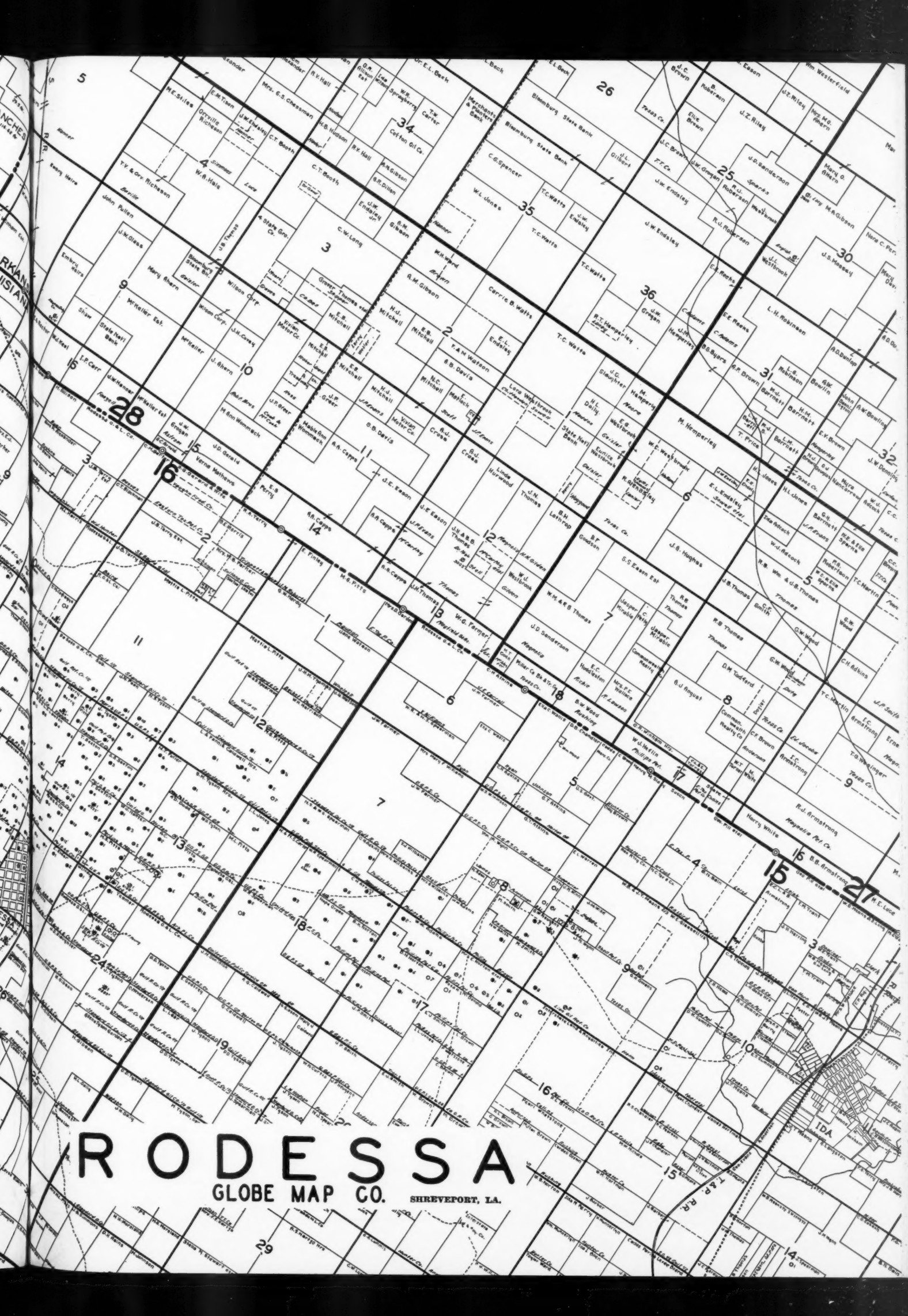
Type drilling equipment used:

Only the heaviest and most modern drilling equipment is considered ample for Rodessa drilling. The field is fast

(Continued on Page 118)

DEPARTMENT OF GEOGRAPHY
THE UNIVERSITY OF NEBRASKA

MARY JOHNSON 371
BRYANT HOLMES
F. A. DE LOS RIOS
H. OWEN
S. S. BROWN
G. CROWDER A-182
DUDLEY GILLIAM
JOHN COLLUM
PRISCILLA EVANS A-331
BEN J. MURRAY A-759
JOHN COLEMAN A-217
JAS. DAVENPORT A-273
B. HERRING
M.M. MILLER A-741
J. BRUTON A-105
B. HOLMES
WALTER STERCHE A-447
C.M. ROBINSON
W. ROBINSON A-907
JAMES YOUNG
ALEX ARCHER A-14
W.A. ELLIOT
SCHOOL LAND A-163
JAS. GARNER A-430
ROBT. POTTER A-825
JOS. COLE
JOS. COLE A-225
A-818
A-1000
A-595
A-510
A-776
A-300
A-76
BEN MURRAY
TEXAS
ARKANSAS
LOUISIANA
RODESSA
Texas Pacific Coal & Oil Co.
United Gas Public Service Co.
Texas Gas Transmission Corp.
Ark. La. Pipe Line Co.
Southern Natural Gas Co.
Lone Star Gas Co.
Arkansas Louisiana Gas Co.
Tennessee Gas Transmission Co.
Transcontinental Gas Pipe Line Co.
Texas Eastern Transmission Corp.
Sun Oil Co.
Humble Oil & Refining Co.
Shell Oil Co.
Gulf Oil Corp.
Magnolia Petroleum Co.
Stanolind Oil & Gas Co.
Cities Service Gas Co.
Kerr-McGee Oil Industries
Phillips Petroleum Co.
Continental Oil Co.
Atlantic Refining Co.
Pan American Petroleum Corp.
Carter Oil Co.
Ohio Oil Co.
Union Producing Co.
Mid-Continent Petroleum Corp.
Louisiana Land & Exploration Co.
Texas Pacific Land Trust
Cotton Valley Unit
Cotton Valley Reef Unit
Cotton Valley Sand Unit
Rodessa Unit
Rodessa Reef Unit
Rodessa Sand Unit
Rodessa Gas Unit
Rodessa Oil Unit
Rodessa Oil & Gas Unit
Rodessa Oil & Gas Reef Unit
Rodessa Oil & Gas Sand Unit
Rodessa Oil & Gas Gas Unit
Rodessa Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Reef Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Sand Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Gas Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil Unit
Rodessa Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Oil & Gas Unit


RODESSA
GLOBE MAP CO.
SHREVEPORT, LA.

becoming known as the proving ground for all-steam drilling equipment.

Fuel:

Due to the abundance of gas for field use, and availability of water from 300-foot wells, steam is the standard drilling power in the field.

Type drilling bits used:

Fish-tail bits are generally employed to about 3,600 feet, where rock bits are universally used to completion. Average of from 15 to 24 rock bits are required per well, depending upon hardness and thickness of certain formations, which have been found to vary from well to well.

Casing program:

Casing practice varies slightly from one operator to another, but general practice is to set from 250 to 500 feet of 13⅜- or 16-inch surface casing, 2,000 to 2,250 feet of 10-inch, and 5¾-inch to 7-inch oil string set below the gas-oil contact at a depth varying from 5,800 to 6,070 feet.

Speed in drilling:

Reducing the original drilling time from 60 to 70 days, a record of 25½ days has been established for the drilling of a Rodessa well. Average time is from 30 to 45 days.

Crooked holes:

Very little difficulty has been experienced along this line, due to the heavy type equipment used, and the character and attitude of the formations penetrated.

Drilling problems:

Twist-offs, washouts and sticking pipe were the early difficulties encountered in Rodessa drilling, but these problems are now met with routine success through proper mud conditioning prior to entering the anhydrite sections.

Character of mud used:

Native mud is quite satisfactory until the anhydrite sections are encountered. All operators now begin conditioning their drilling mud at about 4,000 feet in preparation for the anhydrite sections. It is general practice to keep drilling fluid at about 24 centipoise viscosity below this depth, with an approximate weight of 10 pounds per gallon.

Method of completion:

All wells are drilled through the producing sections with proper conditioned muds, and either washed or swabbed on to production.

PRODUCING PRACTICES

Methods of production:

All wells in the field are now flowing, seven of which are on gas-lift. The present well pressures provide sufficient energy for gas-lift purposes now, but when the time comes that wells cannot be flowed in this manner, it is predicted that they will be placed on the pump rather than erect compressor stations for artificial lifting purposes.

Means of testing for potential:

Allocation in this field is upon a per well basis, and open flow potentials are not needed. All wells are tested for 1 hour flow upon completion, through the most efficient tubing choke, varying in size from three-sixteenths to 1 inch.

Acidizing:

Acidizing has been used to increase effective porosity in certain "tight" portions of the field; to increase pressure and extend flowing life; and will no doubt be used to enlarge drainage area and increase fluid level when pumping becomes necessary.

GENERAL PHYSICAL DATA

Rodessa crude: Gravity ranges from 47 to 40 degrees, average 43 degrees. Color, dark green; sulfur, 3 per cent; pour point, 35 degrees F.; flash point, below 100 degrees F.

Yield: 27 per cent gasoline; 22 per cent kerosene (maximum); 10 per cent gas-oil; 41 per cent residue.

Porosity, 18 per cent.

Permeability, 120 millidarcys.

Saturation, 5 to 20 per cent.

Bottom-hole pressure:

Weighted average in August, 1936, 2,162 pounds, with low pressure areas evident in the Rodessa Townsite and in the densely-drilled areas in section 14-23-16.

Gas-oil ratios:

Louisiana conservation regulations now permit oil wells to have a ratio as high as 12,500 feet per barrel, while gas-distillate wells are permitted a ratio of 25,000 feet per barrel.

Texas regulations permit a volumetric withdrawal of 500,000 feet daily, with no one well having a greater ratio than 2,000 feet per barrel.

Natural gasoline plants:

Absorption natural gasoline plants are now operated or under process of enlargement or original construction by the following companies: United Gas Public Service Co., Arkansas-Louisiana Gas Co., Glen Rose Gasoline Co., Rodessa Gasoline Co., Caltexo Gasoline Co., Tide Water Oil Co., and East Texas Refining Co., having a combined daily capacity of about 370,000,000 feet.

The yield per 1,000 feet in the oil area of the Rodessa field varies slightly according to the gas-oil ratio obtaining at the well. The following table gives a typical and representative fractional analysis of a Rodessa well situated in the oil area, the gas having been taken from the separator at 230 pounds pressure:

	Per cent volume	G.P.M.
Methane	92.53	
Ethane	3.85	
Propane	1.57	
Butane	1.09	.35
Pentanes and heavier	.96	.38
	100.00	.73

The gas is sweet, non-corrosive, and requires no treatment.

To gain an understanding of gasoline plant operations in the Rodessa area, it is necessary to take into consideration the nature of the producing wells to which the plants are connected, for instead of the conventional classification as gas or oil wells, many wells here produce a distillate of 60 or higher gravity, and most gasoline plants are equipped to process some of this distillate as well as handle the wet gas. Natural gasoline production on the 26-70 grade basis averaged 166,740 gallons daily in August, 1936, from the Rodessa plants. The daily distillate production amounted to about 97,000 gallons during the same period.

Pipe lines:

Magnolia Pipe Line Co.'s 8-inch line to Beaumont, Gulf Pipe Line Co.'s line to Port Arthur, Arkansas-Louisiana Pipe Line Co.'s 4-inch line to Bossier City, Standard Oil Co.'s trunk line to Baton Rouge, Texas Co.'s 8-inch line to Beaumont, and United Gas Public Service Co.'s 8-inch line to Longview, Tex., serve the Rodessa field, having an estimated combined daily capacity of 225,000 bbls. Pipe line tariffs average 15½ cents per bbl. in the Rodessa field.

SUMMARY OF CALIFORNIA OIL FIELD OPERATIONS FOR AUGUST, 1936

	Oil field development					Abd. wells	
Group No. 1:	New rigs up	Active drilling	Producers completed	Daily initial output	Active producing	Drillers	Producers
Belridge—North	2	3	3	9,409	36	1	1
Belridge—South	..	..	..	.....	182	..	..
Coalinga	..	2	..	.....	868	1	2
Edison	2	6	4	340	85	2	1
Elk Hills	..	..	..	.....	166	..	..
Fruitvale	5	9	8	1,613	110	1	..
Kern River	9	8	..	.....	1,473	1	..
Kettleman Middle dome	..	1	..	.....	3	..	..
Kettleman North dome	2	16	9	13,708	130	..	..
Lost Hills	2	3	..	.....	273	..	..
McKittrick	..	2	1	40	124	..	..
Midway-Sunset	13	22	7	1,622	2,241	1	..
Mountain View	6	12	5	1,551	157	1	..
Mount Poso	9	11	5	1,165	213	2	..
Round Mountain	6	7	3	1,463	104	..	..
Ten Section (Stevens)	..	1	..	.....	1	..	..
Wheeler Ridge	..	..	..	.....	26	..	..
Group No. 2:							
Capitan	3	2	2	50	24	..	..
Elwood	1	..	..	.....	72	..	..
Rincon	..	..	..	.....	31	..	..
San Miguelito	2	3	..	.....	6	..	..
Santa Barbara	..	..	..	.....	58	1	..
Santa Maria	5	13	2	286	195	2	..
Summerland	..	..	..	.....	19	..	..
Ventura Avenue	..	7	..	.....	219	..	..
Ventura-Newhall	..	14	..	.....	558	3	..
Watsonville	..	..	..	.....	7	..	..
Group No. 3:							
Brea-Olinda	..	1	..	.....	363	..	..
Coyote—East	2	2	1	325	77	..	..
Coyote—West	..	..	..	.....	38	..	..
Dominguez	..	5	..	.....	117	..	..
El Segundo	1	2	1	160	3	..	..
Huntington Beach	1	2	2	294	508	..	1
Inglewood	2	2	2	2,257	193	..	..
Lawndale	..	..	..	.....	6	..	..
Long Beach	..	2	1	115	1,239	..	1
Los Angeles-Salt Lake	..	..	..	.....	122	..	1
Montebello	5	15	2	1,695	181	..	..
Playa Del Rey	1	3	..	.....	212	..	1
Potrero	..	..	..	.....	10	..	..
Richfield	..	4	..	180	241	..	..
Rosecrans	1	1	1	.....	76	..	..
Santa Fe Springs	6	7	1	145	612	..	2
Seal Beach	..	1	1	75	104	..	..
Torrance	10	14	6	590	486	1	..
Whittier	..	..	..	.....	152	..	..
Miscellaneous drilling	9	44	..	.....	.....	12	..
Group No. 4—Gas Fields:							
Buena Vista Lake	..	..	..	.....	.....	..	..
Buttonwillow	..	..	..	.....	1	..	..
Chowchilla	..	..	..	.....	.....	1	..
Delano	..	..	..	.....	.....	..	..
Dudley Ridge	..	1	..	.....	.....	..	..
Goleta	..	..	..	.....	.....	..	..
McDonald Island	1	1	1	Gas	.....	..	..
Rio Vista	..	2	1	Gas	.....	..	..
Semi-Tropic	..	..	..	.....	.....	..	..
Tracy	1	1	..	.....	.....	..	..
August	107	252	69	37,083	12,122	30	10
July	92	245	78	33,958	12,012	18	24
Increase	15	7	*9	3,125	110	12	*14
Average 1935	86	243	64	55,082	12,136	29	17
Average 1934	53	196	38	47,553	11,053	21	17
Average 1933	30	124	21	22,842	9,199	14	18

*Decrease.

CRUDE PETROLEUM PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

	Total production	Daily average		
Group No. 1:	August	Aug., 1936	July, 1936	Aug., 1935
Belridge—North	338,951	10,934	9,901	8,410
Belridge—South	54,560	1,760	1,882	2,527
Coalinga	468,952	15,127	15,515	20,533
Edison	192,179	6,199	5,687	3,165
Elk Hills	257,958	8,321	8,406	9,598
Fruitvale	257,565	8,309	7,926	5,868
Kern River	417,005	13,452	13,722	12,962
Kettleman Middle dome	10,677	344	375	.....
Kettleman North dome	2,467,047	79,582	77,688	71,910
Lost Hills	101,947	3,289	3,309	4,756
McKittrick	53,911	1,739	1,878	4,076
Midway-Sunset	1,756,663	56,666	57,093	56,268
Mountain View	810,884	26,157	26,217	35,203
Mount Poso	544,789	17,574	16,725	17,069
Round Mountain	362,932	11,708	12,016	6,893
Ten Section (Stevens)	24,189	780	803	.....
Wheeler Ridge	10,557	341	339	422
Group No. 2:				
Capitan	46,101	1,487	1,473	1,761
Elwood	356,218	11,491	12,304	12,297
Rincon	65,264	2,105	1,984	2,048
San Miguelito	42,148	1,360	1,381	826
Santa Barbara	36,752	1,185	1,265	2,879
Santa Maria	153,666	4,957	4,680	4,364
Summerland	930	30	34	36
Ventura Avenue	1,051,822	33,930	33,903	35,468
Ventura-Newhall	153,762	4,960	4,791	4,179
Watsonville	1,860	60	60	60
Group No. 3:				
Brea-Olinda	246,446	7,950	8,001	9,539
Coyote—East	78,412	2,529	2,315	2,646
Coyote—West	247,356	7,979	8,189	9,945
Domingues	809,333	26,108	25,588	21,733
El Segundo	10,252	331	379	.....
Huntington Beach	1,099,192	35,458	35,620	43,202
Inglewood	371,842	11,995	11,690	14,233
Lawndale	2,848	92	97	135
Long Beach	2,066,754	66,669	66,972	78,814
Los Angeles-Salt Lake	28,093	906	883	797
Montebello	295,128	9,520	10,235	6,391
Playa Del Rey	367,535	11,856	12,148	16,998
Potrero	8,206	265	320	344
Richfield	195,175	6,296	6,226	7,723
Rosecrans	65,581	2,116	1,996	2,686
Santa Fe Springs	1,400,773	45,186	44,317	44,646
Seal Beach	290,100	9,358	9,492	8,801
Torrance	273,446	8,821	7,744	6,859
Whittier	28,919	933	931	1,067
Total August	17,924,680	578,215	574,500	600,136
Total July	17,809,508	574,500	.....	.....
Increase	115,172	3,715	.....	.....

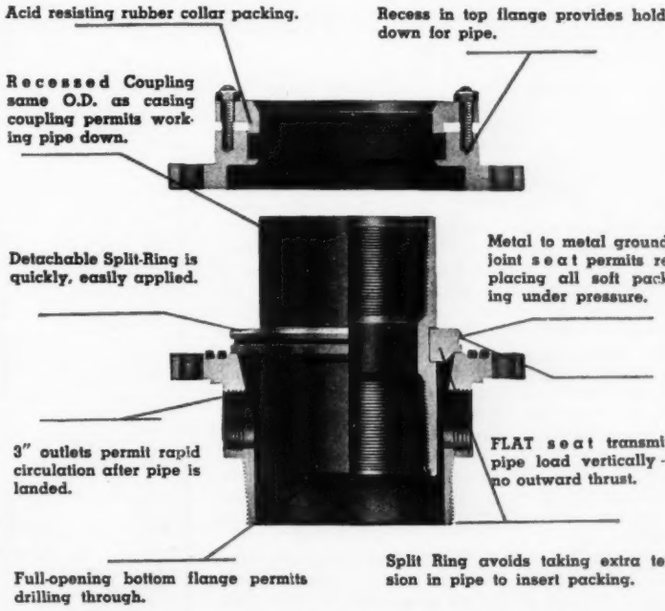
HOT OIL AT RODESSA GETS OPERATORS IN TROUBLE

Not because of over-production, but on account of high temperature which causes expansion of pipe and results in leaks in the Bradenheads.

So—Now They're Specifying

RECTORHEAD

With a RECTORHEAD on the well, expanding pipe can do no damage because it holds the pipe securely in place. Unlike the conventional Bradenhead, no tension is placed on the anchor bolts, or rods. This, together with the "repack under pressure" feature, accounts for the growing popularity of RECTORHEADS in Rodessa, as well as in other fields where pressure, high temperature, or vibration are a handicap to profitable production.


Acid resisting rubber collar packing.
Recess in top flange provides hold-down for pipe.
Recessed Coupling same O.D. as casing coupling permits working pipe down.
Detachable Split-Ring is quickly, easily applied.
Metal to metal ground-joint seat permits replacing all soft packing under pressure.
3" outlets permit rapid circulation after pipe is landed.
FLAT seat transmits pipe load vertically -- no outward thrust.
Full-opening bottom flange permits drilling through.
Split Ring avoids taking extra tension in pipe to insert packing.

"BUY IT AT YOUR SUPPLY STORE"

RECTOR WELL EQUIPMENT CO. INC.

FORT WORTH, TEXAS

WICHITA FALLS MIDLAND TULSA SHREVEPORT HOUSTON

Cooperative Development Plan for Buena Vista Oil and Gas Field

By C. M. NICKERSON
Senior Petroleum Engineer, National Petroleum Reserves in California

The possibility of deeper production in the Buena Vista Hills was first considered in 1933. At that time, however, the heavy state curtailment program served to deter any operator from drilling test wells, which, if successful, might upset the proration schedules. Because most of the acreage was held by several major operators and the balance by substantial independents the adoption of a plan of cooperative development was considered desirable. Such a plan was formulated for the development of any deeper oil and gas horizons which may be found to exist. This plan, which was signed by the secretaries of the navy and the interior on behalf of the United States on July 9, 1936, is now effective for the development of lands within the area shown on Figure 1. Unlike most unit plans, the present cooperative development plan permits each operator to drill and produce his own wells.

For the purpose of this plan the Buena Vista Hills field is divided into two pools. The present production is classed as the "old pool," while any future production below a certain marker which roughly coincides with the bottom of the Santa Margarita formation is included in the "pool" to which the provisions particularly apply.

Naval Petroleum Reserve No. 2 lies within the area and constitutes the major portion of the federal leases subject to the plan. There are 39,040 acres and 27 operators within the area. Twenty-six operators controlling 99.5 per cent of the acreage have signed the agreement.

GEOLOGY OF THE BUENA VISTA HILLS

The Buena Vista Hills consist of a low range in the southern portion of the San Joaquin Valley, and are roughly parallel to the adjacent Temblor range to the south. The Elk Hills oil field parallels the Buena Vista Hills a few miles to the north.

The sub-surface structure is a re-entrant anticline upon the major Midway-Sunset monocline. This anticline is divided into two minor structures, the United anticline in the western half of the field and the Honolulu anticline in the eastern half. Production is almost continuous over these anticlines.

The present oil producing measures are found in the Etchegoin formation of Pliocene age, with a dry gas zone of limited extent overlying the crests of the United and Honolulu anticlines. The Scales and sub-Mulinia oil zones are the source of the major portion of the oil produced in this field at the present time, with some production from the Santa Margarita formation on the south flank.

In the lower half of the Monterey group lenticular oil sand bodies may exist. Geologists estimate that oil measures may exist in the Valvulineria robusta zone, Middle Miocene age, at a depth of about 7,500 feet; at the base of the Temblor formation, Lower Miocene age, at a depth of about 9,000 feet; and at the base of the Vaqueros formation, Lower Miocene age, which is believed to be nearly 10,000 feet from the surface at the crest of the structure. The Oligocene and Eocene age formations may contain oil and gas measures. The depths to these formations may be well below 10,000 feet.

There are 39,040 acres of land within the area included in the cooperative development plan for the Buena Vista Hills oil and gas field, see Figure 1. Of this acreage, 24,640 acres, or 63.1 per cent are owned in fee, 10,800 acres, or 27.7 per cent, are United States Navy fee or leased lands, and 3,600 acres, or 9.2 per cent are under lease from the department of the interior.

The following table shows the distribution of this area by operators, excluding holdings of less than 1 per cent:

Operator—	Acres	Per cent
Standard Oil Co. of California	20,550	52.64
Honolulu Oil Corp., Ltd.	4,120	10.55
North American Oil Cons.	3,240	8.30
Murvale Oil Co.	1,980	5.07
Associated Oil Co.	1,280	3.28
U. S. Navy	1,220	3.13
General Petroleum Corp.	920	2.36
Union Oil Co.	800	2.04
Claude R. Blodgett, trustee	640	1.64
Midway Basin Oil Co.	640	1.64
The Texas Co.	580	1.49
Maricopa Investment Co.	500	1.28
Rio Bravo Pioneer Oil Co.	400	1.03
United Oil Co.	400	1.03
Others, 13 in number	1,770	4.53
Total	39,040	100.00

The above table is based on an ideal section of 640 acres each. As the need arises the actual acreage of each signatory party will be determined. The cooperative plan provides that as the field is developed and the limits of production are determined, owners of unproductive acreage will be eliminated from exercising a vote in the determination of problems arising in the field. The adoption of any uniform drilling or producing practice requires the affirmative vote of the operators holding 80 per cent of the acreage within the area.

Under the cooperative plan of development of the deeper zones in the Buena Vista Hills oil field operating units of 160 acres each, or one-quarter of a section, were established. The first wells to be drilled under this plan are called "primary wells," and are located in the center of each quarter section as shown in Figure 3. The plan contemplates the drilling of the primary wells first on each operating unit. From Figure 3, it may be seen that this gives one-half a mile spacing between the first wells. Such wide spacing in an even pattern over the productive portions of the structure automatically eliminates unnecessary competition, practically all drainage considerations, and other troublesome factors involved in the completion of the early wells in a field if located in the corner of the section or lease, see Figure 2.

After the primary wells are completed on an operating unit of 160 acres, the "secondary wells" may be drilled. These wells are located due north and south, or due east and west of the primary wells. It is obvious from Figure 3 that the only offset required by the owners of the adjacent operating unit will be one secondary well on their own unit, in lieu of the three offsets required if a well were completed in the corner of the section or lease.

After all primary and secondary wells are completed the operator may proceed with the drilling of the "tertiary wells," which are located in the four corners of the operating unit.

These wells are to be located 440 feet from the quarter section lines, with 880 feet between the wells. Such spacing gives a theoretical drainage area of 17.8 acres. The present spacing in the Buena Vista Hills is based on a 7.8 acres spacing as shown on Figure 2. If subsequent developments prove that closer spacing of wells is necessary, by agreement of the signatory parties holding 80 per cent of the acreage, the spacing program may be modified.

The above drilling program and spacing of wells will be found entirely satisfactory for those op-

***A.I.M.E.*—Paper delivered before Pacific Coast meeting, Petroleum Division, Los Angeles, October 1-2, 1936**

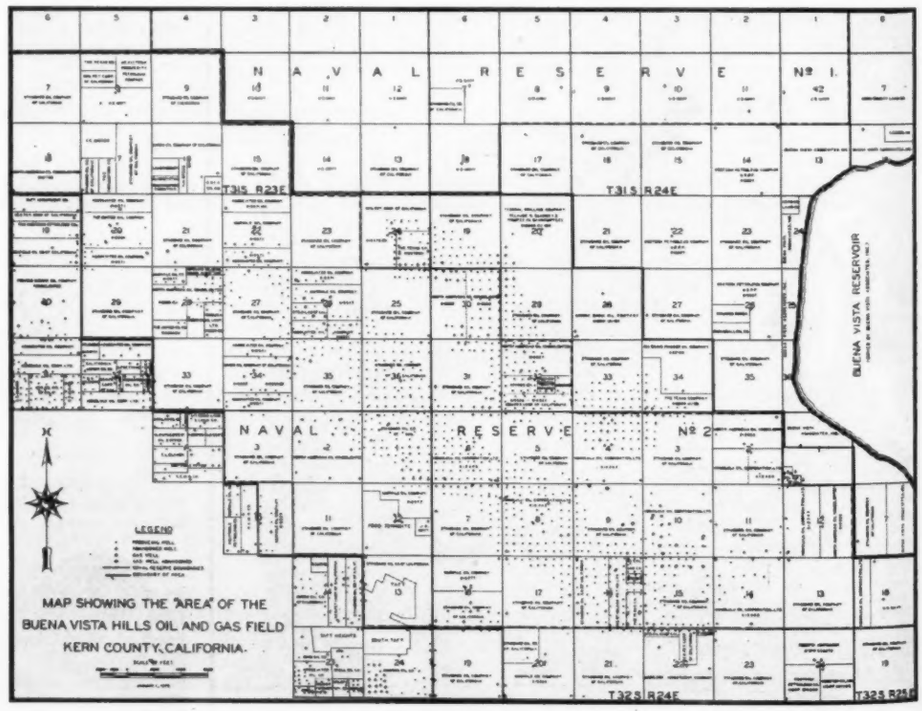

NAVAL RESERVE Nº I
NAVAL RESERVE Nº 2
T31S R23E
T31S R24E
T32S R24E
T32S R25E
BUENA VISTA RESERVOIR
LEGEND
MAP SHOWING THE "AREA" OF THE BUENA VISTA HILLS OIL AND GAS FIELD KERN COUNTY, CALIFORNIA.

Fig. 1 — Map of the Buena Vista Hills oil and gas field

erating units which are located on the higher portions of the structure. It is possible that certain of the operating units are so located near the edge of the field that the primary location would not be productive of oil if drilled. In that event, the operator may select a secondary location to be drilled in lieu of the primary location, providing that the operators of 80 per cent of the acreage agree that the primary location is outside of the

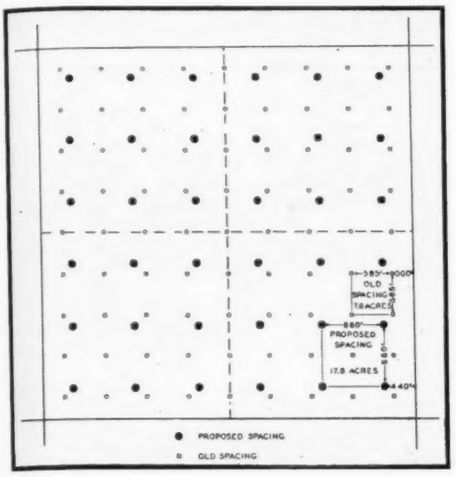


Fig. 2—Ideal section showing surface locations for the "old pool"

productive limits. In the event that all secondary locations on the operating unit are considered unproductive, than by the same procedure a tertiary location may be selected for the first well.

The plan also provides that, notwithstanding the requirements of the above drilling program, an operator may drill any and all wells on the exterior boundaries of the pool which may become necessary to prevent drainage of his operating unit by operators on lands not subject to the cooperative plan.

The above drilling program applies with equal force to each zone discovered to be productive within the limits of the pool. If two separate and distinct zones are located each operating unit may have 18 wells drilled thereon, unless further agreements are made to permit of deepening certain of the first nine wells, or other equitable procedure adopted.

It is quite clearly stated in the cooperative plan itself that nothing therein obligates any operator of an operating unit to drill any well or wells within the pool. Terms of the several leases and good business judgment are considered sufficient to govern the drilling of wells on each operating unit to protect the various interests involved.

UNIFORM PRODUCING PRACTICES

In order that no operating unit may be disproportionately drained of its oil and gas content by operators on adjacent operating units, the plan provides that by agreement of operators holding 80 per cent of the acreage within the pool uniform producing practices shall be adopted which will be binding upon all of the signatory parties. This section of the cooperative plan is intended to prevent one operator from producing wells with an excessive gas-oil ratio or at such a rate that one may recover more than his fair share of the oil and gas content lying thereunder. It is also aimed to control the producing methods at each well in order than the maximum ultimate recovery may be obtained by each unit.

To assist all operators in the proper solution of practices or problems arising from the operation of the plan, if the operators of 80 per cent of the acreage within the pool so request, an engineer or engineering staff may be employed to study such problems and report the findings to the operators for their information and guidance. The cost of such engineering advice and reports will be met by assessment of all operators in proportion to their respective oil production from the pool for the month preceding that in which such report is rendered. After consideration of the report by the operator's committee, and further discussion by all operators concerned, the solution of the problem by vote of the operators of 80 per cent of the acreage of the pool shall be binding upon all signatory parties.

The cooperative plan provides that the vote of operators controlling 80 per cent of the acreage shall govern all drilling and producing practices in the pool, and that the cost of any engineering studies or reports shall be defrayed by an assessment on the basis of the previous month's production rather than on an acreage basis.

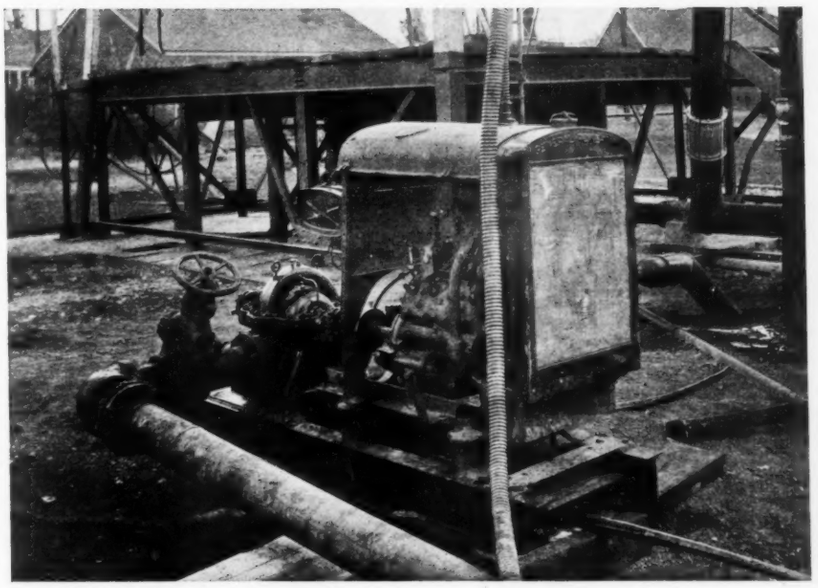
UNITIZATION OF OPERATING UNITS

The spacing of the wells, and the order of drilling the wells, as shown on Figure 3, was based on the assumption that each 160 acres, or one-quarter section, constituted an operating unit under one ownership or management, and also for the reason that by this spacing the fewest number of wells fell on property lines, and that the fewest number of sub-unit plans would be required. It was considered that 160 acres was the smallest practical operating unit. By referring to the map of this field, Figure 1, it may be seen that over a dozen of the quarter sections of land contain divided ownerships.

The plan for cooperative development provides that, where the ownerships are divided and before any wells are drilled to the pool, which underlies the present productive zones of the "old pool," each of these quarter sections will be unitized. Unit plans for such of the operating units which are held in divided ownerships under a government oil and gas lease have been consummated. Where only fee holdings are involved, it is understood that unit plans are pending, and will, no doubt, be adopted before any deep drilling is undertaken.

These unit plans for operating units of one-quarter section in area have the following common provisions: They provide that one of the two parties be the operator of all line wells drilled on the common property line. The second party is called the associate. Wells drilled on the common property line are called joint wells. Where no wells fall on the common property line, one company is appointed the operator to drill and produce all of the wells on the unit. With this ex-

Dependable Power



General Power Conversions of

FORD V-8 ENGINES

for

Drilling—Pumping—Generating

Low initial cost, combined with engine and engine parts exchange plan, assures most economical operation. Units can be run with gasoline or natural gas.

General Power Units are delivering thousands of hours of constant power in practically all divisions of the oil industry.

Immediate delivery on all units.

For prices and information—Write, Wire, or Phone

GENERAL POWER, INC.

QUAPAW, OKLAHOMA. Phone 64

ception and for other than joint wells on the common property line, each operator may drill and produce his own wells on the unit. The operator is required to submit an estimate of the cost of drilling the joint wells, and if this figure is not satisfactory to the associate, then the associate may submit an estimate of the drilling cost. If a mutually satisfactory agreement as to costs cannot be adopted by the two parties, bids may be received from drilling contractors, and a contract awarded. These sub-unit plans contain sufficient provisions to guarantee that the joint wells will be drilled at a mutually satisfactory cost. After completion of the joint wells the operator, for a stated period of time usually for 5 years, will continue to operate the well. The direct cost of drilling and operation of these joint wells is prorated between the two parties, plus an allowance to the operator of a definite sum per month to cover superintendence, geological, and engineering expenses, and other such items ordinarily included in "overhead." After the expiration of the stated period, the associate may take over the operation of the well, and thereafter the two parties will alternate in operating the joint wells. The drilling and production costs of the joint wells, and the petroleum products therefrom, are shared equally by the two parties, if the acreage involved is owned equally, otherwise on an acreage basis. For the purpose of computing the government oil royalties where they involve the number of wells producing on the lease, such joint wells located on the common property line are counted as one-half a well for each lessee.

Space does not permit the setting forth of the other details of each unit plan. In general, the plans are so drawn that the wells are drilled and produced by mutual consent at a cost satisfactory to each party. The agreements between the two parties may be changed at any time, providing that the requirements of the cooperative development plan for the field as a whole are not violated.

PROTECTION AGAINST DRAINAGE BY OUTSIDE INTERESTS

In any plan for cooperative development of an oil-bearing structure a real effort is made to include within the area subject to the plan all possible productive parcels of land. Also, all owners of lands within the probable productive area are urged to sign the agreement. However, it frequently happens that all of the productive acreage is not included within the area of the unit plan, or all owners of the productive acreage do not deem it advisable to join in the plan.

When this condition exists, there is always the threat of drainage of those operating units within

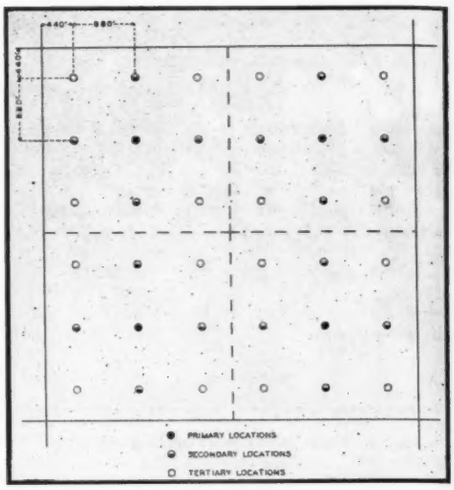


Fig. 3—Ideal section showing subsurface locations for the "pool"

the defined area by operations on adjacent lands which are not conducted in accordance with the provisions of the cooperative plan.

To provide for this contingency, there is a provision in the cooperative development plan for this field which permits any operator to drill such wells as may be necessary at any time and in any place in order to prevent drainage of the operating unit which he controls by operations on lands adjacent thereto but not subject to the requirements of the cooperative plan.

Inasmuch as the operators of over 99 per cent of the acreage within the area of the field have adopted the cooperative development plan, this emergency is not as alarming as it would first appear.

MODIFICATION OF PLAN BY CONSENT OF OPERATORS

As development of the field progresses, it is conceivable that engineering practices or economic conditions may warrant changes in the provisions of the cooperative development plan. Such changes may be adopted by the consent of the operators of 80 per cent of the area subject to the plan, and when so adopted are binding upon all of the signatory parties.

CURTAILMENT OF PRODUCTION

The cooperative development plan provides for the restrictions of the quantity and rate of production of oil, gas, and gasoline from lands within the area by such method as may be voluntarily assumed by the operators of 80 per cent or more of the area. Thus, curtailment of oil production, and incidentally of gas, through affirmative action by the operators of 80 per cent of the area will become binding upon all of the signatory parties.

CONSENT OF ROYALTY OWNERS

In any oil field it is common to find that the operators of certain parcels of land have supplementary agreements with royalty owners, excepting from this group the United States as lessor, which agreements conflict with the provisions of the cooperative development plan. In order to modify these prior agreements, it was necessary to obtain the consent of the royalty owners to the execution of the plan by the operators and to agree that the development of the area in the manner set forth in the plan shall be considered as full performance of all obligations for development and operation of certain parcels formerly required under the original agreement with the royalty owners. These

NATIONAL AIROIL
BURNER COMPANY
ESTABLISHED 1912 INCORPORATED 1917

Manufacturers
Installation
Engineers
Sales—Service

Industrial
Oil Burners
Gas Burners
and
Furnace
Equipment

NATIONAL AIROIL BURNER

NAIROIL
Automatic
Oil Burners
for
HOMES
APARTMENT HOUSES
CHURCHES, STORES
FACTORY BUILDINGS
OFFICE BUILDINGS

25 Years of Learning How to Make
OIL BURNERS

We know how to make oil burners. For 25 years we have been doing that and nothing else. We don't make anything but oil burners and gas burners.

We have learned things in these 25 years that can't be learned without similar experience. We have learned how to make oil burners fitted for each particular furnace in your plant to operate most economically and reliably with poorest quality fuels and to stand up under the most severe conditions.

NATIONAL AIROIL BURNER COMPANY

Offices and Salesrooms
1327 Girard Avenue

Factory
L St. & Sedgley Avenue

Philadelphia, Pa.

consents of royalty owners have been obtained in practically all instances.

The modification of the original royalty owner agreements, as set forth above, eliminates any conflict between lease requirements, royalty owner agreements, intra-company desires and needs, and curtailment of production. The several provisions of these various factors are subordinated to the cooperative development plan, the workings of which are carried out by agreements of the operators of 80 per cent of the area subject to the plan.

PLAN-AGREEMENT BETWEEN UNITED STATES AND ITS LESSEES

Approximately 37 per cent of the area subject to the cooperative development plan for this field is controlled by the United States. Excepting the 3 per cent of the area owned by the U. S. Navy and not leased, 34 per cent is under lease to various operators. These leases from the navy department and from the department of the interior were granted about 1922 for a period of 20 years, with certain provisions for renewal for successive 10-year periods.

Statutory authority contained in the Acts of Congress approved March 4, 1931, and August 21, 1935, which acts amended the Oil and Gas Leasing Act of February 25, 1920, permitted the secretaries of the navy and interior to enter into unit plans involving the cooperative development of an oil and gas bearing structure.

These acts permitted the respective secretaries to modify the drilling and producing requirements, the terms, and the royalty provisions of the leases heretofore issued under the Act of February 25, 1920.

After the cooperative development plan for the Buena Vista Hills field had been formulated, it was necessary to modify the provisions of the existing federal leases to conform to the requirements of the basis plan. Under the plan-agreement all leases from the United States are extended for the life of the field, providing that the lands under lease continue to be subject to the plan. The royalty scales for oil, gas, and gasoline produced and sold from the "old pool" remain unchanged. For production from the new pool new royalty scales have been adopted which, in most cases are somewhat lower than those in effect for the old pool for wells below approximately 1,700 bbls. per day in size. For larger wells the new scale is slightly higher. Space does not permit a detailed analysis of the new royalty scales.

The agreement between the United States and its lessees provide that the operating regulations approved July 1, 1926, as amended prior to July 1, 1935, shall be effective for these leases in lieu of all other operating regulations promulgated by the government.

The secretary of the department having jurisdiction over the lands of the United States is vested with the authority to control the rate of development and of production from these lands in order that the area may enjoy its fair and proper share of the allowable production for the state of California under any system of voluntary curtailment generally recognized by the operators in this field, or by any system authorized by law.

The United States continues to have the right to take its royalties in kind whenever it may so elect.

The lessees of the United States agree to protect the government lands from loss of royalty through drainage within and without the exterior boundaries of the area by either drilling and producing the necessary offset wells, or by paying compensatory royalty in lieu thereof.

The plan-agreement with the United States provides that, if for any reason it is terminated with respect to any government lease, the original terms and conditions, including rents and royalties, of the lease shall become effective. If termination occurs prior to the date of expiration of the lease, it shall be renewed as provided in Section 17 of the Act of February 25, 1920. If any lands leased from the United States are excluded from the pool, as provided for in the cooperative development plan, then such lands revert to the status of the lands in the old pool.

The agreement provides that the United States will not lease or operate any lands it may own, except subject to the terms and conditions of the plan-agreement.

Provision is made in the plan-agreement to amplify, change, or modify the terms of the agreement with the written consent of the operators of 80 per cent of the area of the leases included in the plan-agreement, with the written approval of the respective secretaries.

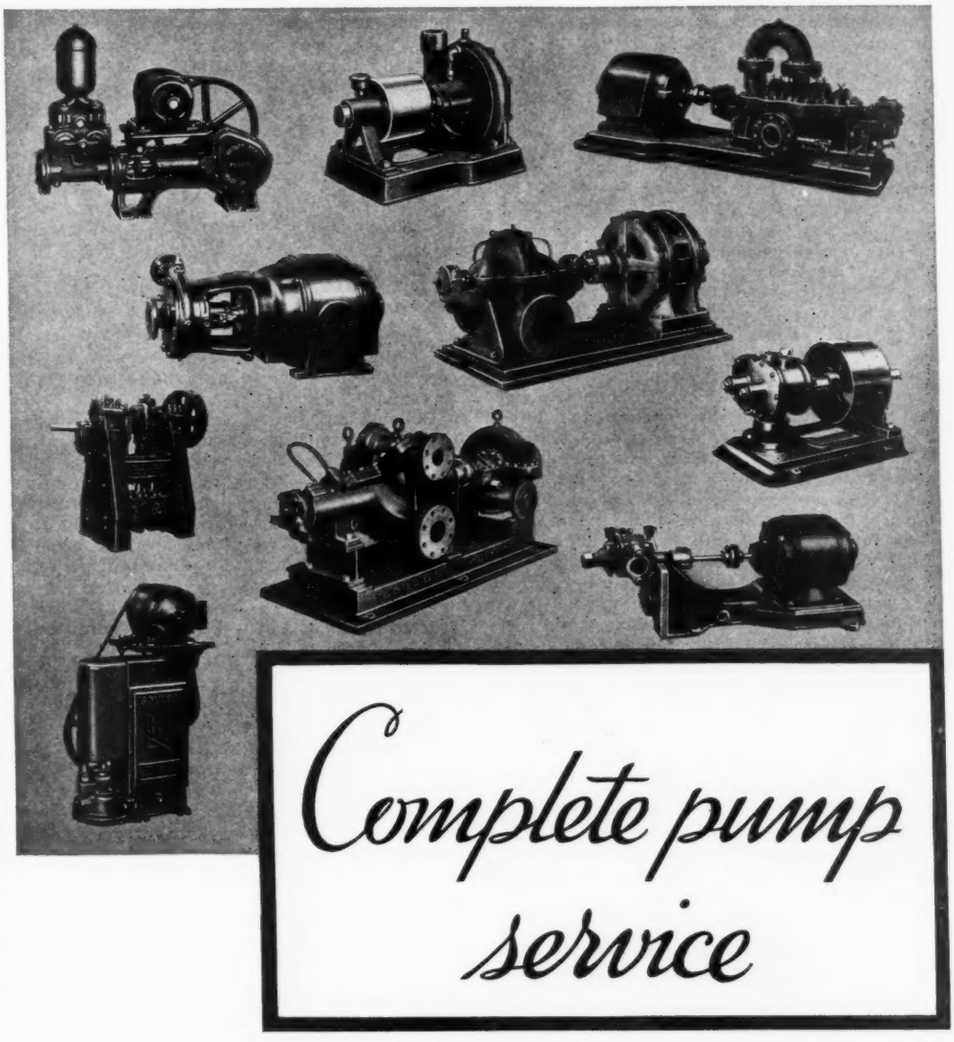
The cooperative plan of development for this field as finally drafted is dated October 1, 1935. The several agreements between the lessees of certain operating units of one-quarter section each, where the ownership was divided, were executed early in 1936. On April 30, 1936, the oil and gas supervisor of the state of California, as required by state law, approved the plan-agreement for cooperative development, and determined that it was in the interest of the protection of oil and gas from unreasonable waste that the plan-agreement be entered into by the signatory parties thereto.

On July 6, 1936, the president of the United States consented to the execution of the plan-agreement by the secretary of the navy. Under present laws this consent was required for any lands within the Naval Petroleum Reserves. On July 9, 1936, the plan-agreement was executed on the behalf of the United States by the secretaries of the navy and of the interior, thus completing the adoption of the plan by all interested parties.

FUTURE POSSIBILITIES UNDER COOPERATIVE PLAN

The upper sands of the old pool are now well-depleted. Sufficient data on the gas repressuring and recycling programs being carried on there now are available to indicate that these upper sands may be readily repressured with dry gas, or used as storage space for volumes of gas above market demands. From an engineering point of view an ideal situation exists whereby substantial oil production with high gas pressures may be obtained

(Continued on Page 130)



There is a Goulds for every purpose in the oil fields, the refinery and on the pipe line. In each is embodied the experience of over ninety years devoted to the manufacture of pumps. Progressive improvements in design, materials and manufacturing methods have made the name Goulds a guarantee of low cost, trouble-free service even under the most severe operating conditions.

Through Goulds engineers a vast amount of information on the pumping of oil, its by products and associated liquids is at your disposal. A discussion of your problem imposes no obligation—it may lead to new operating economies.

GOULDS PUMPS Inc.
SENECA FALLS N. Y.
ATLANTA BOSTON CHICAGO HOUSTON NEW YORK PHILADELPHIA PITTSBURGH TULSA, Representatives in all Principal Cities

651

Estimation of Oil and Gas Reserves

By R. L. HUNTINGTON
Petroleum Engineering School, University of Oklahoma

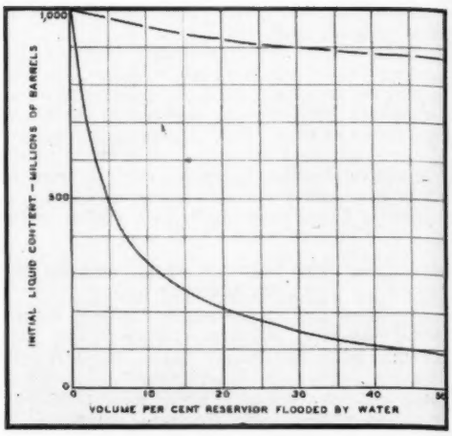


Fig. 1—Effect of water encroachment on estimated liquid content of reservoir, in which no original gas cap is present and crude oil is saturated with gas. Lower curve, early date, 2,000-pound average bottom-hole pressure. Upper curve, late date, 400-pound average bottom-hole pressure. At discovery, average bottom-hole pressure was 2,600 pounds

For a number of years the sand volume-saturation method has been used as a means of estimating the quantities of crude oil and gas present in underground reservoirs. This method has given satisfactory results only in fields where the geological data are sufficiently complete to define the limits of the pool. In 1929, Coleman, Wilde and Moore[1] developed a method that makes it possible to determine the contents of a reservoir based on a material balance; that is, the contents of the original reservoir are equal to the fluid produced up to any time plus the quantity remaining in the reservoir at that time. To carry out such calculations, pressure-volume-temperature relationships and solubility-shrinkage data on the reservoir fluids had to be obtained along with statistics on the accumulated production of the crude oil and gas over the various periods. Ben E. Lindsly[2] contributed much toward this phase of the work through the analysis of bottom-hole fluids from several major oil fields. Schilthius[5] has recently estimated the initial fluid content of the Conroe field in a quantitative manner through the study of such factors as water encroachment, the presence of a gas cap and "active" oil. Katz[3] has made calculations on the Wilcox sand of the Oklahoma City field and has obtained consistent results based on oil and gas production data covering a four-year period. This new method of estimating the size of crude oil-gas reservoirs is particularly adapted to fields in which the limits of the producing zone have not been defined by the drill. In well defined fields where confidence has been placed in the sand volume-saturation method, the material balance as originated by Coleman[1] and his coworkers may also well serve as a check on the former plan of making calculations. The purpose of this paper is to show how further applications may be made in the use of the material balance as well as the necessary precautions to be taken and the limitations of the accuracy of such calculations.

THE ESTIMATION OF GAS RESERVES

This new principle can be applied to the calculation of gas reserves. In applying the material balance, it may be stated that the amount of gas originally present in a gas reservoir is equal to the amount produced up to any date plus the amount remaining in the reservoir on that date. In the absence of sand volume-porosity data for a reservoir in which no oil is present, the method of determining the original amount of gas be illustrated by the following hypothetical case:

	Pressure	Temp.	Compressibility factor of gas	$= \frac{PV}{RT}$
Orig. reservoir conditions	2,000	125°F.	0.85	
Av. reservoir conditions at time Θ	1,200	123°F.	0.88	

Cubic feet of gas produced up to time Θ = 50,000,000,000 feet measured at standard conditions. Assume further that during the production of the gas one-tenth of the original reservoir was flooded through water encroachment. Let V equal the number of cubic feet of original pore space filled with gas at initial reservoir conditions and of a composition comparable to 90 per cent methane and 10 per cent propane. The compressibility factors were taken from original data published by Sage, Lacey and Schaafsma.[4]

Solution:

Standard cu. ft. of gas at 14.7 lb. per sq. in abs. and 60° F. Original gas reserve = produced gas + gas remaining in reservoir.

$$V \times \frac{2000}{14.7} \times \frac{250}{585} \times \frac{1}{0.85} = 50{,}000{,}000{,}000 + 0.9\,V \times \frac{1200}{14.7} \times \frac{520}{583} \times \frac{1}{0.88}$$

$$142.3V = 105{,}000{,}000{,}000, \text{ original gas in reservoir}$$
$$105 - 50 = 55{,}000{,}000{,}000, \text{ gas remaining in reservoir}$$

In this particular problem it happens that the corrections for temperature and compressibility tend to offset each other.

Assume that a reservoir that has been producing both oil and gas is now under a pressure of 1,000 pounds per square inch, and that its crude oil, which occupies 75 per cent of the pore space, is in equilibrium with the gas cap, which fills the remaining 25 per cent of the voids. If the field were shut in, and edge water permitted to encroach sufficiently to fill 10 per cent of the original pore space occupied by the crude oil and gas, what pressure would be developed in the reservoir?

A.I.M.E.—Paper delivered before the Petroleum Division of A.I.M.E., Fort Worth, Tex., October 8-9, 1936

Referring to Lindsly's data,[2] it is found that for an average Mid-Continent crude oil about 23 cubic feet of gas go into solution per barrel of residual crude oil for every 100-pound increase in pressure throughout the range of 500 to 2,000 pounds per square inch. The 23 cubic feet of dissolved gas occupy a space of 0.0535 cubic feet in the crude oil. It is assumed that 750,000,000 bbls. of liquid are in the reservoir, of which 625,000,000 bbls. are residual crude oil. Assume further that equilibrium exists between oil and gas at all times.

Since a part of the gas goes into solution as the crude oil is forced into the gas-cap space, the increase in pressure is not directly proportional to the volume of the intruded water. Let V equal the volume in millions of barrels of the original pore space occupied by the oil and gas, or 1,000,000,000 bbls. = 5,062,000,000 cubic feet. The volume of the gas cap before waterflooding would, therefore, be equal to 1,405,000,000 cubic feet. Let Z equal the number of 10-pound increments in pressure due to water-flooding. The net shrinkage of the gas-cap would be equal to the gas-cap gas that goes into solution under reservoir conditions, less the increase in the volume of liquid due to the solution of gas into the crude oil. In order to estimate the volume of gas-cap going into solution, it is necessary to resort to successive approximation.

Trial 1—Assume the final pressure on the reservoir to be 1,250 pounds per square inch absolute. The net shrinkage of the gas cap in cubic feet due to the solution of the gas into the crude oil will, therefore, be:

$$\left(23 \times \frac{1000 + 1250}{2} - 0.0535\right) \frac{14.7}{625 \times 10^6}\, Z$$ (neglecting any change in the compressibility factors of the gas in the pressure range, 1000 to 1250 lb. per sq. in.) $= 154 \times 10^6 Z$

The final pressure on the reservoir can be expressed in two ways. On the left-hand side of equation 1 (below), it is seen that the final pressure equals the initial pressure plus the number of 100-pound increments of pressure. On the right-hand side, the final pressure is equal to the pressure that would have been exerted had the gas been compressed from 25 volumes to 15 volumes; i.e., 10 per cent of the total voids corrected for the factor

$$\left(\frac{1405 - 154\,Z}{1405}\right)$$

the fractional size of the new gas cap compared to that of the original, due to the effect of solution alone.

$$1000 + 100\,Z = 1000 \times \frac{25}{15} \times \frac{1405 - 154Z}{1405} \quad (1)$$

$$Z = 2.34$$

P_2 (the final pressure 1,000 + 100 (2.34) = 1,234 pounds per square inch.

The second approximation would give a pressure between 1,234 and 1,250, probably nearer the former pressure.

Trial 2:

$$\text{Gas-cap shrinkage} = \left(23 \times \frac{1000 + 1234}{2} - 0.0535\right) 625 \times 10^6 Z = 158.5Z$$

$$1000 + 100Z = 1000 \times \frac{25}{15} \times \frac{1405 - 158.5Z}{1405}$$

$$Z = 2.35 \qquad P_2 = 1000 + 2.35\ (100) = 1235$$

Therefore, the final pressure would equal 1,235 pounds per square inch provided equilibrium was maintained between the encroaching oil and gas that was being compressed in the gas cap. In an

WARREN *markets* 81% *of* RODESSA NATURAL GASOLINE

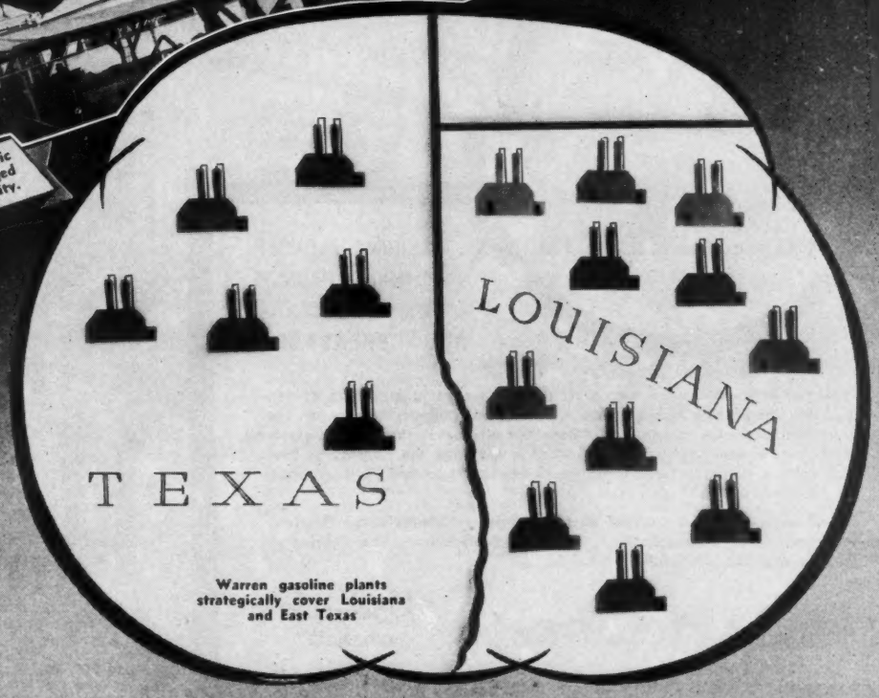
Marketing the output of 81% of all the Natural Gasoline produced in the great Rodessa field is an important service to the operators of this area, but one which Warren Petroleum Company is admirably equipped to render.

The far flung network of its service facilities makes Warren the logical liaison between American producers of Stabilized Natural Gasoline and the leading refiners of the world. Our adequate export terminal facilities at Port Arthur, and Norsworthy (Houston) Texas, are backed by marketing, storage and transportation facilities unexcelled anywhere in the great petroleum industry.

WARREN PETROLEUM COMPANY
Tulsa, Oklahoma
MANUFACTURERS, EXPORTERS AND MARKETERS
Export Terminals: Port Arthur and Norsworthy, Houston, Texas

WARREN PETROLEUM COMPANY
WARREN
TULSA, OKLAHOMA

Warren markets the output of this big United Gas Public Service Co. plant at Myrtis, La., now being enlarged from 80,000,000 feet to 140,000,000 feet capacity.



Warren gasoline plants strategically cover Louisiana and East Texas

JUST NATURAL GASOLINE

actual case the rate of diffusion of the gas into the oil would be so slow that it is unlikely that any appreciable rate of water encroachment would keep the oil in a saturated state with respect to the gas in the gas cap.

EFFECT OF WATER ENCROACHMENT ON ESTIMATED SIZE OF AN OIL RESERVOIR

If no edge-water drive takes place, it is reasonable to assume that the oil-gas pore space will remain substantially constant throughout the life of the field. Whenever a series of calculations, over a long period, are made on a reservoir, and the results show approximately the same initial fluid content regardless of the year the data are obtained, the indications point toward the absence of water encroachment. However, in the event that the undrilled portion of a reservoir is connected to the developed sections through a narrow neck or a cross section of sand of low permeability, the calculations will be in error since the average bottom-hole pressure in the proven area will not represent the average pressure over the field as a whole. If water were flooding the proven area of such a field, calculations would not reflect this encroachment since the increase in pressure, due to the approach of water would be offset by the lag in the equalization of gas pressure from the undeveloped portion of the reservoir. Should water encroachment not be taken into consideration in a field where there is an equal distribution of gas pressure, the calculated initial contents would, of course, increase with time. Vice versa it would be expected that the initial fluid content would fall off if corrections were made for water displacement. These corrections will have marked effect on the size of the estimated reservoirs, if they are made in the early life of the field when the bottom-hole pressures are relatively high. Figure 1 shows the great divergence in the effect of such corrections for water encroachment based on a reservoir that was assumed to have 1,000,000,000 bbls. of initial fluid.

An example will best illustrate the steps taken in securing the calculated results given in Figure 1. An average value was taken of several solubility shrinkage curves for Mid-Continent crude oils as determined experimentally by Lindsly.[3]

Assume that 5 per cent of the reservoir has been flooded when the bottom-hole pressure has fallen to 400 pounds per square inch. At that time, 272,000,000 bbls. of reservoir liquid fluid and 371,000,000,000 cubic feet of gas measured at standard conditions have been produced.

Let V = total volume of original reservoir content or space in millions of barrels.

Then 0.05V equals volume of water (encroached) minus water produced.

Net amount of liquid removed from the reservoir equals: (272—0.05V) million barrels.

Let G equal volume of gas cap in million barrels.

(1) Using Katz'[2] method

$$G = 1 + \left(\frac{1}{0.0413 \times 437}\right)(272-0.05V = 1.058\ (272-0.05V) \text{ million bbl.}$$

or (288—0.0528V million bbl.

Where 0.0413 equals the volume in cubic feet (gas-cap conditions) based on one standard cubic foot of gas, and 437 is equal to the number of standard cubic feet of gas evolved from 1 cubic foot of liquefied or dissolved gas:

(2) Volume of residual crude to produce excess gas = 550,000,000 bbls.

(3) Volume of residual crude to produce gas-cap gas
$(5.62 \times 437)\ (0.058)\ (272-0.05V) = (73.5-0.0092V)$ million barrels.
Where $(5.62 \times 437) = 2{,}450$ cubic feet gas evolved by 1 bbl. of liquefied gas and 527 = number of cubic feet of gas evolved per barrel of residual crude oil between 2,640 and 400 pounds per square inch.

(4) Volume of oil-gas reservoir = volume of gas cap plus volume of remaining partially saturated crude oil.

Volume of reservoir = volume of gas cap + vol. of remaining crude oil
$(288-0.0528V) + 1.14\ (550\ [73.5-0.0092V])$

$0.95V$ = where 1.14 is the volume of the crude oil saturated at 400 pounds compared with the volume of residual crude at atmospheric pressure.

V = 983,000,000 bbls. initial fluid present in reservoir.

This quantity is only 1.7 per cent less than the amount of fluid based on no water encroachment, whereas a 5 per cent water intrusion early in the life of the field would reduce the estimated initial fluid to 50 per cent of that in the constant volume reservoir.

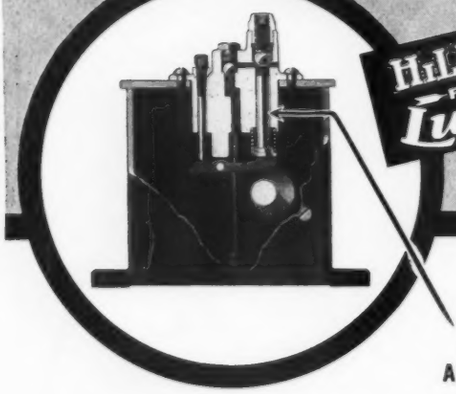
THE PRESENCE OF A GAS CAP AT THE TIME OF DISCOVERY

In most oil-gas reservoirs where the crude oil is found in a saturated state, some free gas is usually present as a gas cap. A hypothetical reservoir having a crude oil similar to the one described in this paper has the following production record:

Residual crude oil produced = 27,300,000 bbls.
Gas produced = 60,000,000,000 std. cu. ft.
Bottom-hole pressure = 1,990 lbs. per sq. in.
Original bottom-hole press. = 2,460 lbs. per sq. in.

Using the method employed by Katz,[2] calculations show that 64,100,000,000 standard cubic feet would be evolved from the reservoir crude oil to fill the gas cap provided no original gas cap was present. If the assumption is made that none of the original free gas in the gas cap comes to the surface during this period, it is seen that this free gas will expand as the pressure falls from 2,640 pounds down to 1,990 pounds. If this same reservoir had an original gas cap occupying 50 per cent of the oil-gas pore space, the following calculations would show the size of the reservoir:

ONE OF THE MANY REASONS
why USERS prefer
HILLS-McCANNA FORCE-FEED Lubricators



SINGLE PLUNGER PUMPING PRINCIPLE POSITIVE—ACCURATE AND DEPENDABLE

Years of efficiency prove that a single plunger pump with ball valves and packed stuffing boxes is the most efficient and positive means for pumping lubricants to bearings. Once the oil passes through the sight-feed—you definitely know the lubricant is reaching the bearing or friction surface because there is no possibility for it to find its way back to the reservoir.

There are many other reasons that have given Hills-McCanna Lubricators first place in mechanical force-feed lubrication. Our lubricator catalog explains them fully. Send for it.

HILLS-McCANNA CO. 2351 NELSON ST. CHICAGO

Engines and Compressors "breathe" ABRASIVE DUST! Stop it with . . . Enclosed DUSTOP FILTER UNITS

Attached to air intake

Hour after hour—day after day—abrasive dust wears away at cylinders and piston rings. Stop this unnecessary wear with Dust-Stop. Fill in the accompanying form, attach it to your letterhead, and MAIL IT TODAY! Our reply will bring an illustration, specifications and price of the correct Dust-Stop unit for your equipment. (If more than one engine or compressor, give complete data on each.)

ENGINE and COMPRESSOR DATA
Make_____
Bore_____in. Stroke_____in.
No. Cylinders_____ R.P.M._____
☐ Single Acting ☐ Two Cycle*
☐ Double Acting ☐ Four Cycle*
*Engines only
DIESEL
☐ Plain Scavenging
☐ SuperScavenging
☐ Super Charged
Size and type of intake _____

OWENS-ILLINOIS GLASS COMPANY • 309 MADISON AVENUE • TOLEDO, OHIO

Further assume that no original free gas in the gas cap comes to the surface.

Let V = total valume of original reservoir in million barrels.

Then 0.5V = total volume of original gas cap in million barrels.

Let G = volume of gas cap in million barrels when the pressure = 1,990 pounds.

(1) Volume occupied by original gas cap at 1,990 pounds pressure

$$0.5V \times \frac{2640}{1990} \times \frac{0.83}{0.82} = 0.672V$$

(2) Actual volume occupied by gas evolved from reservoir crude oil to fill gas cap.

64,100,000,000 × 0.00699 = 448,000,000 cubic feet or 79,700,000 bbls.—0.172V since 0.172V equals the increase in volume of the original gas in the gas cap, due to the decrease in reservoir pressure. Where 0.00699 = volume of a standard cubic foot of gas at reservoir conditions,

G = (1) + (2) = 0.672V + (79.7—0.172V)
Total volume of reservoir (V) = (1) + (2) + (3)
(1) Gas cap
(2) Volume of residual crude to produce excess gas plus dissolved gas remaining
(3) Volume of crude for gas cap plus remaining dissolved gases
or (1) 0.672V + (79.7—0.172V) million barrels
(2) 276 × 1.293 = 357,000,000 bbls.
(3) $\left(\frac{64{,}100 - 0.172V}{147}\right)\frac{}{1}$ 1.293 = 564 — 0.223V (where 147 cu. ft. is the amount of gas evolved per barrel of crude) from 2,640 lbs. down to 1,990 lbs. pressure
V = 1,384, total size of oil-gas reservoir in million barrels
0.5V = 692, space occupied by gas cap in million barrels
0.5V = 692, space occupied by liquefied crude in million barrels

Size of reservoir = 1,000,000,000 bbls. (saturated crude oil) based on a constant volume for the oil-gas reservoir, and no original gas cap.

It is seen, therefore, that the size of the oil-gas reservoir is somewhat larger than when the pore space was assumed to be filled entirely with saturated liquid. The amount of crude oil present in the former, however, would be only 69.2 per cent of the quantity existing in the smaller reservoir completely filled with saturated crude oil.

CONCLUSIONS

Certain hypothetical cases have been discussed in this paper. However, with solubility-shrinkage and P-V-T data on the original bottom-hole fluids of a reservoir, along with fairly accurate statistics on the production of oil and gas, the actual quantity of fluids (liquid and/or gas) in a reservoir can be estimated by means of the material balance. Such factors as water encroachment and the presence of an original gas cap should be considered for under certain reservoir conditions these variables may affect the calculated results markedly.

The writer wishes to express his appreciation to Booth B. Strange, now with Western Geophysical Corp., Tulsa, Okla., and Donald J. Cowan, now with Gulf Refining Co., Port Arthur, Tex., for their assistance in making the calculations. These men received degrees in engineering from the University of Oklahoma in 1936.

LITERATURE CITED

[1] Coleman, Wilde and Moore: Trans. A.I.M.E. (1930) 86, 174
[2] Katz, D. L.: The Oil Weekly (Oct. 14, 1935).
[3] Lindsly, B. E.: U. S. Bureau of Mines, Tech. Paper 554.
[4] Sage, B. H., Lacey, W. N. and Schaafsma, J. G.: Ind. & Eng. Chem. (1934) 26, 214.
[5] Schilthius, R. J.: The Oil and Gas Journal (Oct. 17, 1935).

New Solvents and Resin From Coal

A broad study of the refining of light oils at by-product coke plants is being carried on at Mellon Institute of Industrial Research, Pittsburgh, Pa. P. J. Wilson, Jr., and J. H. Wells, who are in charge of this work, have recovered from the residues several new products, including a series of high-boiling oils and a dark stable resin, which can be produced in large quantities at low cost.

The high-boiling oils are largely aromatic hydrocarbons with small proportions of paraffins and compounds soluble in 80 per cent sulfuric acid. The general characteristics of these oils are as follows:

Boiling range: Between 180° C. and 375° C.
Specific gravity: 0.950 to 1.030 at 15.5° C.
Corrosion: Negative by copper strip test.
Acid number: 0.1.

These oils possess excellent solvent properties. They are solvents for rosin and resinates, many natural gums, a large number of synthetic resins, rubber and chlorinated rubber, and "Thiokol." Sulfur and paraffin are dissolved to a limited extent in the cold. The oils are miscible with most of the commercial organic solvents, and are not affected by water, brine, alkalis, or dilute mineral acids.

The characteristics of the oils suggest applications for them in many industries, such as the manufacture of paint, varnish and lacquer, rubber, wood preservatives, insecticides and fungicides, cleaning agents, roofings, floorings, and asphalt.

The new resin is apparently a mixed polymer of cyclic dienes and aromatic olefin compounds. Its principal characteristics follow:

Color: Brown to black.
Melting point: Soft to 140° C.
Specific gravity: 1.150.

Flashpoint: High. The 65° C. melting point resin has a flashpoint of 260° C.

Free carbon: None.

Emulsification: The lower melting resin is readily emulsified with water.

The resin is soluble in many commercial solvents, including the aromatic hydrocarbons, drying oils, and chlorinated hydrocarbons. It is slightly soluble in alcohol and petroleum hydrocarbons. It is miscible with sulfur, many gums and resins, including rubber, indene-cumarone resins, rosin, asphalt and coal-tar pitch, and pine tar.

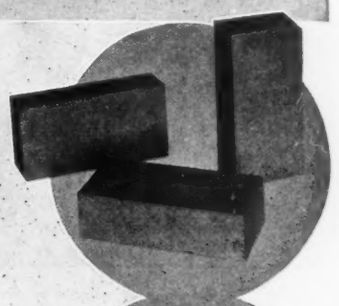
USE CARBON

THE CORROSION RESISTANT MATERIAL OF CONSTRUCTION

Highly resistant to the action of acids, alkalies and solvents . . . High thermal conductivity and low coefficient of expansion afford high resistance to thermal shock . . . Mechanically strong—Infusible—Good electrical conductivity.

CARBON BRICK and Special Carbon Shapes

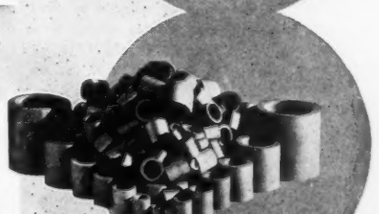
Carbon Brick, Tile and Special Shapes provide a corrosion resistant material of construction for all types of chemical-proof masonry. Standard sizes of carbon brick, straight, soap, arch and key, are available from stock. Tile and special shapes are prepared to customer's specifications.



CARBON RASCHIG RINGS

THE IDEAL TOWER PACKING MATERIAL
Six carloads shipped to one large oil company
EIGHT STANDARD STOCK SIZES
Outside Diameter and Length

¼" x ¼"	¾" x ¾"	1¼" x 1¼"	2" x 2"
½" x ½"	1" x 1"	1½" x 1½"	3" x 3"



CARBON GROUND ANODES

Used for cathodic protection or electric drainage of pipe lines . . . for protection against leakage currents . . . for ground connections of all types in corrosive soil.

Thousands of these rods are now being used for pipe line protection.

For your construction corrosion problems write to—

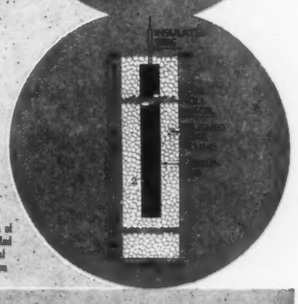


Illustration of recommended method of installation

NATIONAL KEMPRUF CARBON PRODUCTS ARE PROVING TO BE MATERIALS OF WIDE UTILITY IN THE OIL, GAS AND CHEMICAL PROCESS INDUSTRIES

NATIONAL CARBON COMPANY, INC.
CARBON SALES DIVISION, CLEVELAND, OHIO
Unit of Union Carbide UCC and Carbon Corporation
BRANCH SALES OFFICES: NEW YORK - PITTSBURGH - CHICAGO - SAN FRANCISCO

Bottom-Hole Pressure Used in Determining Well Capacity

By MORRIS MUSKAT
Gulf Research & Development Corp., Pittsburgh, Pa.*

In preparing a well for pumping, observations are often made of the fluid level in the well bore, or bottom-hole pressures at various times before equilibrium has set in. From a qualitative point of view one may immediately infer that if the rise in the bottom-hole pressure or fluid level is rapid the permeability of the sand about the well bore is large, and converse conclusions may be drawn if the rise is slow. However, a more quantitative estimate will give additional information of value, as will be shown in this paper.

To derive such an estimate we may proceed as follows. Let h be the fluid height, above the sand face, at time t, and let γ_0 be the average density of the fluid that enters the bore. The bottom-hole pressure, for a fluid height h, will, therefore, be

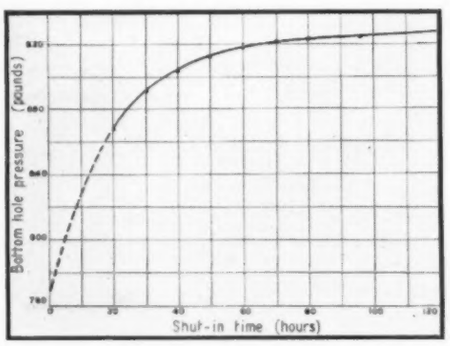


Fig. 1—Average bottom-hole pressure rise for 20 wells in the Judkins field, Ector County, Texas, March, 1935

(The author is grateful to G. A. Pool, chairman of the Judkins Pool Engineering Committee for permission to publish this curve.)

$p = \gamma_0 gh$, neglecting, of course, the friction drop in the well bore, while the fluid is rising, as may be justifiably done for most pumping wells.

If a is the free area of the open-flow string—assumed to be uniform—the rate of production from the sand during the rise of fluid will be:

$$Q = a\frac{\partial h}{\partial t} = \frac{a}{\gamma_0 g}\frac{dp}{dt} = f(p), \qquad (1)^1$$

where the last part of the equation merely indicates that, in general, the production rate Q must be considered as a function of the back-pressure, and is determined by it alone. In fact, Equation 1 shows that if the rate of rise of the pressure or fluid level is determined as a function of the height of rise, or p, for a number of values of the latter, this functional relation between Q and p will be given immediately.

Conversely, if we know this functional relation, the rate of increase of p or h may be predicted, or by observing the rate of rise of p or h some of the constants of the sand may be determined. Thus we may approximate the production from a well in a pumping state by that of a dead fluid, and neglect the effect of the gas on the law of flow. (In fact, if one should extrapolate to consolidated sands the results recently established for the flow of gas-liquid mixtures through unconsolidated sands [R. D. Wyckoff and H. G. Botset, and M. Muskat and M. W. Meres, Physics, September, 1936], it would appear that Equation 2 may be a good approximation even if the oil and gas should flow as a "live" fluid, except during the first stages of the pressure build-up, when the liquid saturation about the well bore may show an appreciable increase. The constant c will then, of course, no longer be given rigorously by Equation 8.) We shall have then:

$$Q = c(p_e - p) \qquad (2)$$

where c is a constant depending on the dimensions of the system (sand thickness, well radius, "external" radius) and is proportional to the sand permeability, and p_e is the reservoir pressure. With this form for Q, the integral of Equation 1 takes the form:

$$p = p_i + (p_e - p_i)(1 - e^{-\gamma_0 gct/a}) \qquad (3)$$

or:

$$h = h_i + (h_e - h_i)(1 - e^{-\gamma_0 gct/a}) \qquad (4)$$

where, since $p = p_e$ and $h = h_e$ at $t = \infty$, p_e and h_e correspond to the actual closed-in bottom-hole pressure and the final equilibrium fluid level, respectively, and p_i, h_i are the initial values of the bottom-hole pressure or fluid height; i.e., those at the instant chosen to represent $t = 0$.

Rewriting Equations 3 and 4 in the forms:

$$\frac{-\gamma_0 gct}{a} = \log\frac{p_e - p}{p_e - p_i} = \log\frac{h_e - h}{h_e - h} \qquad (5)$$

(All logs are to base e, or natural.)

we see that if the time is observed for the rise in the pressure or fluid height to the values p or h, and if the final equilibrium pressure or fluid height p_e, h_e is known, as well as the area of the hole a, and the fluid density, Equation 5 will give the value of c as:

$$c = \frac{a}{\gamma_0 gt}\log\frac{p_e - p_i}{p_e - p} = \frac{a}{\gamma_0 gt}\log\frac{h_e - h_i}{h_e - h} \qquad (6)$$

And if c is known, the production capacity of the well for any back-pressure follows from Equation 2. Thus the maximum pumping capacity would be when $p = 0$.

$$Q = cp_e = \frac{ap_e}{\gamma_0 gt}\log\frac{p_e - p_i}{p_e - p} = \frac{ah_e}{t}\log\frac{h_e - h_i}{h_e - h} \qquad (7)$$

A.I.M.E. **—Paper delivered before the Petroleum Division of A.I.M.E., Fort Worth, Tex., October 8-9, 1936**

In the latter form one does not need to know the fluid density. However, it should be mentioned that the observations of the pressure p or height h should be made for values that are not very close to the equilibrium values p_e, h_e, or else small errors in the measurement of p or h will give a relatively large error in the value of c and in Q.

If the times are observed for more than one pressure or fluid height, they should give the same value of c as computed by Equation 6 provided Equation 2 is correct. Or, the data may be plotted on semilogarithmic paper with the t on the cartesian scale and $p_e - p$ or $h_e - h$ on the logarithmic scale: the points should then lie on a straight line, the slope of which will give the value $\gamma_0 gc/a$.

If Equation 2 is found to hold—i.e., if the above plot does give a straight line—the constant c may be resolved theoretically into the form:

$$c = (2\pi kb/\mu)/\log r_e/r_w, \qquad (8)$$

where k is the sand permeability, b its thickness, μ the viscosity of the oil, r_w the well radius, and r_e the external radius at which the pressure is p_e, under flowing conditions. If, then, c is determined by the above method and the sand thickness and radii r_w, r_e are known, the sand permeability may also be computed. (It is assumed here that the well completely penetrates the producing sand. If this is not so, and the actual well penetration is known, a correction factor must be applied. This will be found in the paper by R. D. Wyckoff, H. G. Botset, M. Muskat, and D. W. Reed: Ameri-

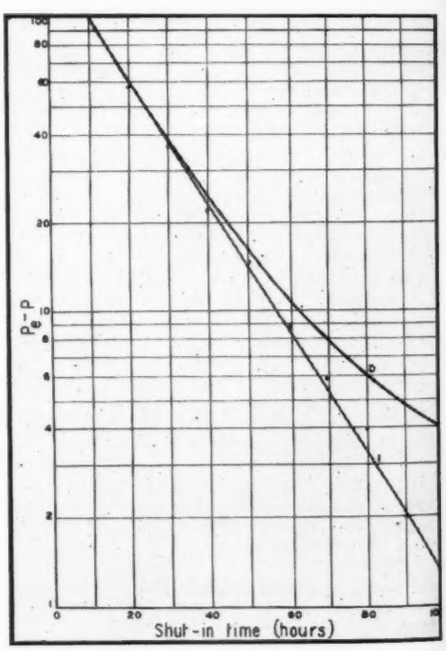
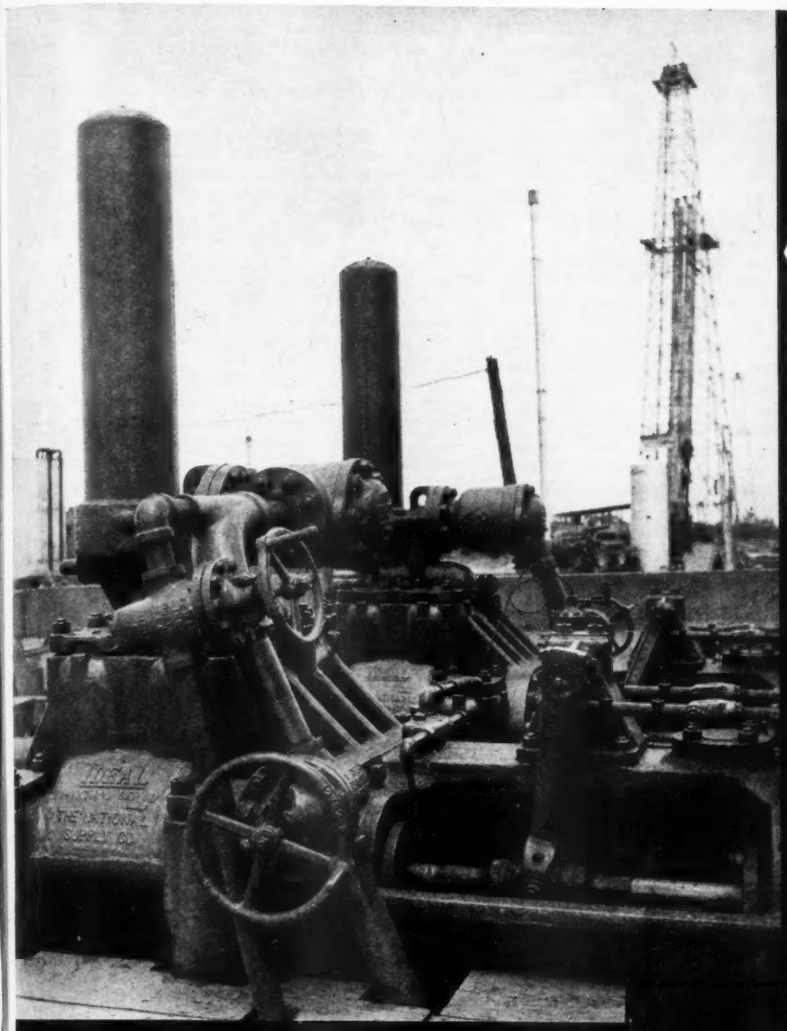


Fig. 2—Data of Figure 1 replotted in a semi-logarithmic scale: $p_e - p$ = reservoir-pressure — bottom-hole pressure: Curve 1: p_e = 928 lbs.; Curve 2: p_e = 930 lbs.

*Author's title: "Use of Data on Build-Up of Bottom-Hole Pressure Or Rise of Fluid Level in Pumping Wells in Determining Production Capacity of Well Reservoir Pressure."

[1]Equation 1 implies that the increasing bottom-hole pressure is due only to the rising fluid head. It will, therefore, break down in the case of flowing wells after shutting in, where the compression of the gas in the well bore will give additional time varying contribution to the bottom-hole pressure.



WHETHER

it be on

SLUSH PUMP MANIFOLDS

at

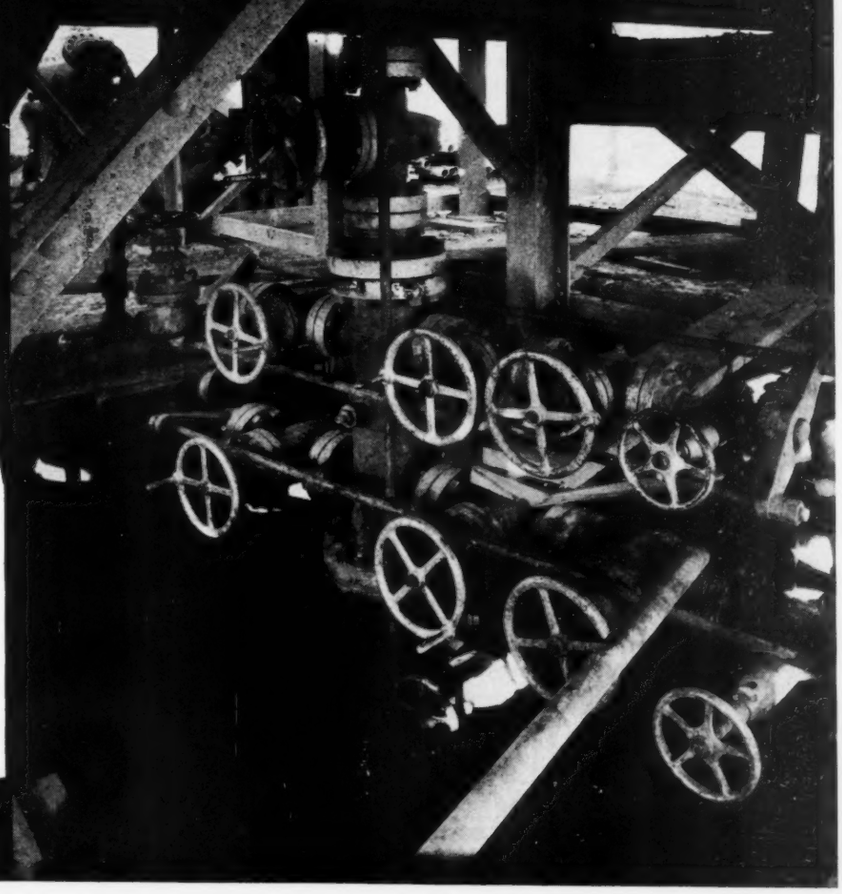
OKLAHOMA CITY . . .

or on

CHRISTMAS TREE

HOOK-UPS at

RODESSA



W-K-M

Through Conduit

LUBRICATED GATE VALVES

are your assurance of easy opening and closing, a tight seal every time, and a life of service several times that ordinarily received.

COSTS NO MORE THAN ORDINARY VALVES • SOLD THROUGH SUPPLY STORES EVERYWHERE

W-K-M Company, Inc.

OIL FIELD, PIPE-LINE & INDUSTRIAL EQUIPMENT

HOUSTON, Texas, U. S. A.

Export Office: 74 Trinity Place, New York

Cable Address: "WILKOMAC"

BEST

FOR THE JOB IT'S BUILT FOR

THE LAYNE SCREEN

Don't waste money experimenting. Always get Layne Screen, and know you'll get best results. More than a third century of construction skill back of the Layne Wire Wrapped Screen. This third century of satisfactory service has proven the superiority of Layne Screens.

LAYNE & BOWLER CO.
HOUSTON, TEXAS

can Association of Petroleum Geologists [1934] 18, 161, Figure 7.).

A deviation of the plot of p_e—p or h_e—h against t on semilogarithmic paper from a straight line may be due to one of two reasons. Either the flow is not like that of a dead liquid, so that Equation 2 is not valid, or the value of p_e or h_e, from which is substracted the observed p or h, is incorrect. A choice between these alternative may be made by attempting to straighten out the curve by changing the value of p_e or h_e. If this is unsuccessful, the incorrectness of Equation 2 is established. If, however, a straight line is obtained, Equation 2 will not only be verified, but the correct value of p_e or h_e will at the same time be obtained.

In fact, this adjustment of p_e or h_e so as to make the plot of p_e—p or h_e—h versus t a straight line, on semilogarithmic paper, affords a rapid and very sensitive method for determining the true reservoir pressure. For if the sand is "tight" it may take several days or more for the reservoir pressure to be built up at the bottom of the well bore, so that the cost of determining the reservoir pressure will be prohibitive. If, however, bottom-hole pressures or fluid heights are recorded simply for a pressure-differential variation of some twentyfold over a 10- to 20-hour interval, during the period of appreciable rate of increase, the above method will permit the determination of p_e or h_e without the necessity of waiting for equilibrium to be established. At the same time the value so obtained will be very accurate, as errors in the assumed value of p_e as low as 5 pounds will cause an easily detected deviation of the plot from strict linearity over a pressure range such as 40 to 800 pounds.

Although the author has not had available suitable field data with which to test satisfactorily the above theoretical results, the manner of the determination of the reservoir pressure may be illustrated by an application of the procedure outlined to the data shown in Figure 1, giving the average rate of increase in the bottom-hole pressures of 20 wells in the Judkins field, Texas. When plotted on semilogarithmic paper, with the reservoir pressure p_e taken as 928 pounds these data give the straight line, Curve 1, Figure 2. If the data had referred to a single well this linearity would have been evidence of the general validity of the above theory for that case, and not essentially fortuitous, as it actually is. Furthermore the sensitivity of this test to the value 928 pounds for p_e, is strikingly shown by comparison of Curve 1 with Curve 2, in which the same data are plotted, but with p_e = 930 pounds.

It is hoped that with a knowledge of the possible applications of such field data as used above, it will be found feasible to collect at least enough to determine their value from a practical point of view. (A study of this kind is now being conducted by E. W. Kemler and G. A. Pool, of the Gulf Oil Corp.)

The author is indebted to R. D. Wyckoff for helpful discussions of this problem, and to Dr. P. D. Foote, the executive vice president of the Gulf Research & Development Co., for permission to publish this paper.

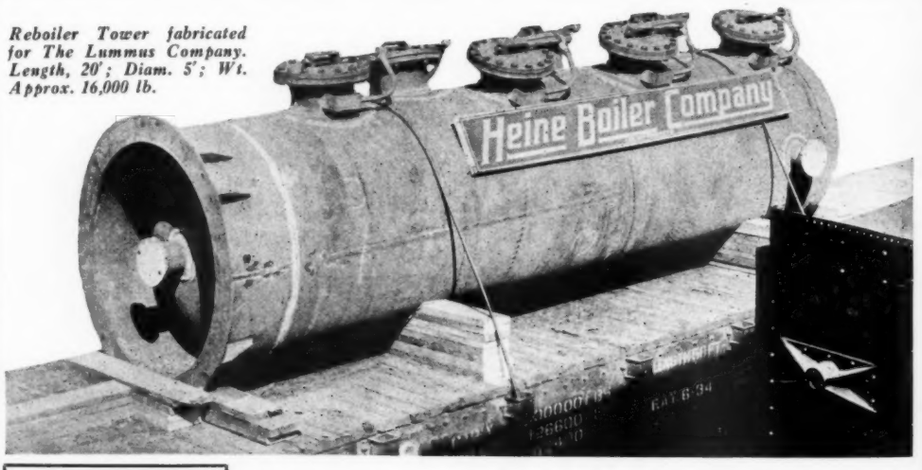
Bottom-Hole Pressure Used in Determining Well Capacity

(Continued from Page 123)

from the deeper zones during the summer months of increased market demands for oil, while the high-pressure gas for which there is but a small summer market, after being treated for its gasoline content, may be stored in the depleted upper oil measures. During the winter months when the gas market is able to absorb larger volumes of gas, such stored gas may be withdrawn from the upper zone, treated for its gasoline content, and sold to the public utilities.

The elimination of unnecessary competition and the fostering of cooperative effort by the plan indicate that there is every reason to believe that the deeper zones in this field will be developed in the most economical manner and that duplication of facilities will be kept to the minimum.

Reboiler Tower fabricated for The Lummus Company. Length, 20'; Diam. 5'; Wt. Approx. 16,000 lb.



STILLS
TOWERS
SEPARATORS
ACCUMULATORS
REBOILERS
STABILIZERS
TANKS
COLUMNS
FLASH CHAMBERS

CE pressure vessels fabricated for refineries are backed by more than fifty years of experience on this type of work. Shop facilities include the most modern equipment, such as powerful X-ray machines, stress-relieving furnaces, chemical, physical and metallurgical laboratories. CE equipment and experience assure work of the highest quality produced rapidly and at minimum cost. May we demonstrate on your next installation?

MANUFACTURING DIVISIONS PRODUCING PRESSURE VESSELS AND FABRICATED PLATE WORK
THE HEDGES-WALSH-WEIDNER COMPANY, CHATTANOOGA, TENN.
HEINE BOILER COMPANY, ST. LOUIS, MO.

A-311

COMBUSTION ENGINEERING COMPANY, INC.
200 Madison Avenue, New York, N. Y. Canadian Associates, Combustion Engineering Corporation, Ltd., Montreal

Pressure-Controlled Completions Are Not Necessarily High-Pressure Operations

By JOHN O. FARMER
Otis Pressure Control, Inc., Dallas, Tex.

Many oil men, who have not had actual experience in completing a well under pressure control, are under the impression that the operation requires the carrying of dangerously high working pressures on the surface connections during the drilling-in operations. That the carrying of these dangerously high surface pressures is not normally necessary is indicated by the fact that the maximum drilling-in surface pressure on the second Wilcox sand wells in the Crescent, Oklahoma, field—wells with potentials ranging from 35,000 to 65,000 bbls. per day with from 45,000,000 to 88,000,000 feet of gas—is less than 200 pounds per square inch while the average drilling-in pressure on the several hundred wells completed in this manner in Oklahoma, Texas and New Mexico is considerably less than 100 pounds per square inch. Certainly these surface drilling pressures are not high enough to be classed as hazardous.

REDUCING CLOSED-IN PRESSURES

The lowering of possibly high closed-in pressures to the low drilling-in pressures given above is accomplished simply by pulling the well nearly wide open while drilling is taking place. It might seem, at first, that this nearly wide-open operation of the wells might result in coning as the water level is approached. Possibly there is some danger of this under certain conditions, but when it is considered that the drill stem occupies a large portion of the casing, thus reducing the effective flow area and increasing the friction of flow, and that the pumps throughout the drilling operations are being used to circulate oil and gas, thus tending to partly load the well and to increase the friction of flow up the casing, it will be realized that nearly wide-open flow at the surface by no means necessarily implies a marked lowering of bottom-hole pressure. No mechanical equipment is available for accurately measuring these bottom-hole flowing pressures while drilling and circulating are both taking place, and it is probable that attempts to calculate them would be little more than a series of guesses. However, enough is known regarding resistance to flow through the annular space between two pipe strings, and enough experience has been obtained when snubbing pipe against flow, to warrant the above statements regarding pressure drop from the bottom of the hole to the surface. Also, at times the large variance between flow capacity at a given surface working pressure with the drill stem in the well and with circulation taking place, and the flow capacity of that well against a similar surface pressure with the drill stem out of the well and no circulation taking place, indicates that considerable back pressure may be held on the sand while drilling and circulating. It is obvious that where well productive capacities are large, relatively high bottom-hole pressures together with low surface pressures can be maintained with but little, if any, assistance from the pumps. Where, however, well capacities are low, the higher bottom-hole pressures may be maintained by increasing pump speed or by increasing amount of gas introduced through the drill pipe. Oklahoma City furnishes a simple extreme instance of this means of increasing the back pressure on the sand, in that increasing the rate of either oil or gas circulation beyond a certain point may kill the production from the formation. Making connections necessitates momentarily shutting off the pumps. The time required for making connections is, however, so short as to ordinarily have no material effect on surface flowing pressures, although in some instances it is the practice to speed up the pumps for a few minutes just before making a connection in order to maintain a low surface pressure without lowering bottom-hole pressure to too great an extent.

A.I.M.E. —Paper delivered before the Petroleum Division of A.I.M.E., Fort Worth, Tex., October 8-9, 1936

Probably the most satisfactory method of determining the bottom-hole flowing pressure while drilling and circulating would be to gauge the well's net productive capacity against a reasonable range of surface flowing pressures, and to compare these net figures with the production index curve of the well after completion. Such a comparison should indicate at least the approximate bottom-hole flow pressure when circulation and drilling were taking place. In order to have a comparable well condition, the tubing in the well, when taking pressure readings for the production index curve, would need be of the same outside diameter as the drill stem employed and flow would have to be from between the casing and tubing. Productive tests of a well while drilling in are usually made with circulation stopped and often with the pipe picked up off bottom, and tests of the well's capacity after completion are usually made of the flow through, not around, the tubing. Usually too, either the drilling contractor or the operators are in too much of a hurry while drilling in to closely gauge both rate of circulation and well delivery. The information regarding the drilling-in bottom-hole pressures that might be obtained by a series of such tests would, however, seem to be well worth while.

HIGH FLOWING-PRESSURES

While maintaining comparatively high bottom-hole flowing pressures during the drilling operations may be of importance in some fields, there are many fields in which the drilling-in time is so short after the bit has penetrated the sand that wide-open flow at the surface to maintain low surface drilling pressures will do no harm. In many areas, too, the problem is not so much the matter of holding a high bottom-hole pressure and a low surface pressure as it is one of maintaining a low enough bottom-hole pressure to permit the well to produce into the circulating column. The Mansion area of Oklahoma City affords such an example. With bottom-hole pressures of only 500 pounds or less, the operators are primarily interested in maintaining a low enough bottom-hole pressure to permit the wells to produce during the drilling-in operation. To accomplish this, 3-inch drill stem was generally used inside of 8⅝-inch or 9⅝-inch casing to secure a large annular opening between the strings, and, after production was obtained, pumping was no faster than necessary to keep the bit clean.

VARIANCE IN WELL CAPACITY

Only a few data are available to substantiate the assertion that there often is a wide differential in the capacity of a well with the drill stem and bit in the hole and the capacity of that well with the drill stem out of the well. An average of the capacity of eight representative wells in the Oklahoma City field with the drill stem picked up into the casing was shown to be 225 bbls. per hour. These same eight wells, with the drill stem out of the hole and producing against approximately the same trap pressure, showed an average potential of 757.5 bbls. hourly, or an increased capacity of 318 per cent. The average capacity of two of the recent large high-pressure completions in Crescent, Okla., was 975 bbls. per hour with the drill stem in the hole and 2,100 bbls. with the drill stem out of the hole. The average increased capacity in this instance was 215 per cent. The latter figures were obtained with no circulation taking place. Had the pumps been in operation while the tests were being made with the drill stem in the wells, the average net producing rate of the wells would doubtless have been much less than the 975 bbls. given. Certainly the above figures would indicate that nearly wide-open operation of the wells while drilling and circulating does not necessarily imply a dangerous drop in bottom-hole flowing pressures.

This discussion has concerned only the low pressures maintained while drilling and circulating. It is also usually possible to maintain low surface pressures while coming in or out of the hole with the drill stem; as shown by the fact that in the majority of instances it is possible to make trips with the drill stem through oil savers only, and that only occasionally is snubbing necessary. Low surface pressures are maintained while making a trip either by flowing the well hard or by loading as nearly as possible with oil just before starting out with the pipe. There are, of course, areas in which the formation porosity, is so great that no appreciable loading with oil can be accomplished; and, too, it is not always practicable to have sufficient storage to permit flowing the well hard during trips. For such conditions there is always the customary high-pressure control equipment for running and pulling pipe to fall back on if necessary.

A brief summary of the drilling-in procedure in the principal Mid-Continent areas in which drilling in under pressure control is generally practiced may serve to indicate that low surface drilling pressures are usually possible.

THE MANSION AREA—OKLAHOMA CITY

The low bottom-hole pressure, the loosely cemented sand, and the high saturation that are present in the Mansion area of Oklahoma City are factors that the operators have to consider in pressure drilling. The top of the Wilcox sand is encountered between 6,375 and 6,450 feet. Either 8⅝ or 9⅝-inch casing is set upon the sand. Between 85 and 100 feet of sand is then drilled, depending upon the thickness of the sand and the proximity of the water level. Operators try not to drill below 5,275 feet subsea level, which is the water level. The Wilcox sand is so porous and permeable that it is impossible to circulate water or oil alone, so it is necessary to use gas and oil as a medium for lifting cuttings and lubricating the bit. A column of 48 degrees A.P.I. gravity oil 6,400 feet long exerts a pressure of approximately 2,000 pounds per square inch at the sand face:

And since there is only approximately 500 pounds per square inch bottom-hole pressure, the oil alone would go back into the formation rather than circulate. It is, therefore, necessary to lighten the fluid column with gas. Approximately 3,000,000 feet of gas per day, under 600 to 700 pounds per square inch pressure, is injected into the oil stream at the standpipe to lighten and aerate the column and lift the cuttings. Before sufficient formation oil is encountered to provide natural flow, 20 to 30 bbls. per hour are circulated into the hole with the gas.

Operators have found that it is best practice to have the wells flowing their maximum capacity while drilling in, for two reasons: (1) The Wilcox sand is loosely cemented, and if produced wide open the hole will "bell shape" and create a larger drainage area; (2) if a well is produced wide open, the velocity of the flow is so great there is little chance for the cuttings to settle back around the bit and drill pipe to cause a stuck job. Therefore, the operators are desirous of having as little back pressure as possible on the surface connections. This is accomplished by having oversize flow lines, a large oil and gas separator, and oversize oil and gas vent lines. These oversize connections contribute to some extent to the low flowing pressures encountered while drilling in. The only pressure carried on the separator is that required to force the oil to the tank battery, or about 35 pounds per square inch.

EDMOND, BRITTON AND CRESCENT AREA

In the Edmond and Britton pools the production is from the Wilcox sand, which varies in depth from 6,450 to 6,750 feet. Either 7-inch or 8⅝-inch casing is set on top of the Viola lime and cemented with 2,000 sacks of cement. The cement plug and 140 to 150 feet of Viola lime are drilled with mud fluid. Water is then pumped into the hole to displace the mud fluid. A high-pressure gas line is hooked into the standpipe, and the water is blown from the hole by stages. The Viola lime is treated with 1,000 to 3,000 gallons of acid under pressure of several hundred pounds. After the acid is allowed to set 36 hours in the well, drilling is resumed, oil being circulated to lift the cuttings. The bottom-hole pressure varies in this field from 2,200 to 2,600 pounds per square inch. This column of oil is barely sufficient to load the hole and keep the well from flowing. At different depths the operators will kick off a well by tying the high-pressure gas into the standpipe in order to take a production test. The connections on the christmas tree consist of two master gates, flow cross, blowout preventer, oil stripper and kelly drilling head. A few of the wells have been drilled in by circulating gas and oil and permitting the well to flow while drilling was in progress. Pressures on the christmas tree were about 30 pounds per square inch during this operation. These low flowing pressures in spite of the high shut-in pressures are probably due to the small volume of gas and oil in the pay sand, and a tightly cemented, rather impermeable reservoir.

The present activity in the Crescent pool consists of drilling into the second Wilcox sand, which is about 75 feet below the Upper Wilcox. The State Corporation Commission has recently classified these two sands as having separate sources of supply, which has forced the operators either to twin the old well or cement a liner shutting off the Upper Wilcox before deepening into the Lower Wilcox. The same process of drilling is practiced here as in Edmond and Britton, oil being used as a medium for lifting cuttings. The Upper Wilcox has a bottom-hole static pressure of about 1,800 pounds per square inch, so the hole can be loaded easily with oil. The section separating the two sands is extremely hard, and only 2 to 4 feet of hole can be drilled with one bit. The second Wilcox is loosely cemented, very porous and highly saturated, having a bottom-hole pressure of approximately 2,400 pounds per square inch. It is almost impossible to keep the hole loaded with oil, so the well is permitted to clean itself; and the remainder of the hole is drilled with the well flowing. Three floats are used in the drill pipe next to the bit; but when the big "pay" is hit, the floats usually cut out or fail to operate properly. A special tool joint is now being used, which has a locking recess that serves to engage a removable plug. The special tool joint is placed on the first joint above the floats. When the floats fail, the plug is pumped down to seat to the special nipple. Any flow upward tends to seat the cups on the plug, causing a shutoff. When the drill pipe is in the hole, the wells flow from 800 to 1,500 bbls. per hour, with 40,000,000 to 50,000,000 feet of gas daily. While the wells are in this condition the pressure on the control heads is from 100 to 175 pounds per square inch.

FITTS AND JESSE POOLS

The production in the Fitts field of Pontotoc County, Oklahoma, is from three different horizons and is classified as three separate sources of supply. The Hunton lime is the first commercial production encountered and is usually topped at about 3,300 feet. This section varies in thickness from 150 to 250 feet. It is the practice of several operators to acidize the Hunton in stages; that is, to drill 100 feet and acidize, then drill the remainder and acidize. No potentials are taken on these wells, since they are allowed a flat rate of 79 bbls. per day. The bottom-hole pressure on these wells is from 800 to 1,750 pounds per square inch.

The Viola lime, the Bromides and the McLish sands constitute the second source of supply. The average thickness of this pay is as follows: Viola, 230 feet; Bromides, 250 feet; McLish, 325 feet. Either 7-inch or 8⅝-inch casing is usually set 10 to 50 feet in the Viola. The bottom-hole pressures vary from 1,100 to 1,250 pounds per square inch on the west side to 1,600 to 1,750 pounds per square inch on the east side.

The Wilcox sand is the last source of supply, and usually is topped around 4,300 feet. A string of 9⅝-inch casing is set on top of the Viola. The Simpson series is drilled and a string of 7-inch casing is set in the Wilcox lime. About 140 feet of Wilcox sand is then drilled. The bottom-hole pressure of the Wilcox is around 1,400 pounds per square inch.

The method of drilling in the above wells is practically identical with the method employed in the Jesse field. Cement is allowed to set seven

HIGH PRESSURE WELLS AT RODESSA

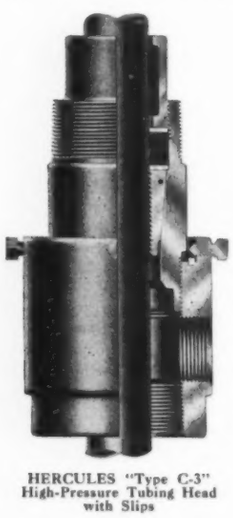
will be SAFE with

HERCULES "Overhead-Packed" HEADS

To quote from an article in *The Oil and Gas Journal*, Sept. 10th —"Only the newest and improved type well head connections are considered safe at Rodessa, in view of the high pressures encountered during the completion of each well."

Operators in the Rodessa field can depend on HERCULES High-Pressure Casing and Tubing Heads to meet their requirements for EXTRA-SAFE well head connections. Our "Type B" Forged Steel Casing Head is tested for 7,000 pounds and will safely carry a hanging weight of 400,000 pounds. Improvements in design and construction include—(1) HERCULES "Overhead-Packing" arrangement, which permits repacking and adjustment of pressure on the packing *without lifting casing or disturbing well hook-up.* A gas-tight pack is formed ABOVE the slips by means of split steel and split rubber packing rings. (2) Completely machined inside and out, and constructed of special forgings to eliminate all internal defects. (3) Casing reduction simplified by using smaller head on inside string. (4) Built to A. P. I. specifications. (5) Slips cannot hang or foul. Also furnished with mandrel. Tie-down lugs on order.

HERCULES "Type B" High-Pressure Casing Head with Slips



HERCULES "Type C-3" High-Pressure Tubing Head with Slips

The HERCULES "Type C-3" Forged Steel Tubing Head with "Overhead-Packing", is tested for 5,000 pounds and offers a factor of safety of four to one. This Head is actually a *combination* casing head and tubing support. The packing bowl (top section) screws down tight into a Forged Steel casing head (bottom section) with oil-saver top. Tools can be run into the well simply by unscrewing the packing bowl. When the two sections are screwed tightly together, "Type C-3" becomes practically a one-piece forging that is positively leak-proof. The only packing used is ABOVE the slips. Can also be furnished with mandrel.

Supply stores carry the complete line of HERCULES High-Pressure Heads. For further particulars, write for our Catalog No. 36, or consult 1936 Composite Catalog, pp. 629-631.

HERCULES TOOL COMPANY

Manufacturers and Distributors

OIL WELL SPECIALTIES

Phone 3-9158 TULSA, OKLAHOMA P. O. Box 286

Branch Office:
FORT WORTH, TEXAS
Fair Bldg., Box 954
Phone 2-7028

HERCULES TOOL TULSA

Export Office:
30 Rockefeller Plaza
NEW YORK
Cable Address:
HERTOCO

days, then drilled by circulating water. As soon as the plug is drilled, the column of water is lightened by connecting a high-pressure gas line into the standpipe and circulating 1,000,000 to 2,000,000 feet of gas, under 800 pounds pressure: along with the 350 bbls. of water per hour that is being pumped into the hole with mud hogs. As soon as the formation begins to make sufficient oil, the water is pumped into the pits and oil and gas used as a circulating medium. Operators try to keep the back pressure on the well connections below 100 pounds per square inch to maintain sufficient velocity to prevent cuttings from settling back around the bit and causing a stuck job. In a few of the Wilcox wells the operators were unable to get the flowing pressure below 125 pounds per square inch, but as a general rule it is comparatively easy to pull the well down below 100 pounds per square inch. A production log is made for each well, and is regarded as very valuable information. It is a pictorial representation of a well, showing exactly the productivity of each foot of formation. As a well goes into the later stage of depletion, the cleaning out or plugging back becomes necessary, this log becomes a guide for the operators.

NEW MEXICO AND WEST TEXAS

Well completions here are very similar to the operations in the Edmond and Britton fields. The cement plug is first drilled with mud fluid, then the intakes to the mud pumps are connected to an oil-circulating tank. The mud is displaced with oil and actual drilling is started. The bottom-hole static pressure in the Monument and Eunice pools is from 1,390 to 1,430 pounds per square inch. The depth of this production is approximately 3,875 feet. A column of 35 degrees A.P.I. gravity oil 3,875 feet long exerts a pressure at the bottom of approximately 1,400 pounds per square inch. Therefore, the column of oil is scarcely sufficient to keep the wells from flowing while drilling. However, a complete pressure-drilling hook-up is installed, for the following reasons: (1) In several wells the column of oil is not heavy enough to balance the formation pressure, so the wells were permitted to flow while being drilled in. (2) The operators wish to test the productivity of the well at various depths while drilling so high-pressure gas is connected into the standpipe and the well is kicked off. (3) The flow or return is always under control, thus permitting safe operation.

When wells were being drilled-in while flowing, the pressures on the separators were usually 20 pounds per square inch, and on the well-head connections about 50 pounds per square inch.

CONCLUSION

In our organization we are frank to admit that we were surprised to find it is possible to complete wells under pressure control without having to combat pressures more nearly equal to those of the well when closed in. Like many others, we had not taken into full consideration the various factors, such as the choking effect of the drill stem and the loading effects of the pumps, that make it normally possible to flow the drilling wells down to low surface pressures without necessarily maintaining a dangerously low bottom-hole pressure. The fact that it is normally possible to do this, and, by controlling the amount and gravity of the fluid circulated, to largely control the flowing pressure maintained on the sand during the drilling operation, takes completions under pressure control out of the hazardous class of oil field operations and places them among the more or less routine field operations.

Muscovite in Bradford Sand

The Bradford sand, which is the producing strata of the Bradford field in northern Pennsylvania, contains a great many very small flakes of muscovite, the common transparent mica. These flakes lie parallel to the bedding plane of the sand and play an important part in the success of water-flooding. Since the vertical permeability of the sand is practically zero, the packing off of loose sand sections in wells is effective.

Field Reports are the ultimate test of Pumps & Sucker Rods

•

INVESTIGATE AXELSON'S RECORD

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

AXELSON MANUFACTURING CO.

P. O. Box 710 Vernon Station, Los Angeles

St. Louis 50 Church Street, New York Tulsa

Mid-Continent and Eastern Distributor: Frick-Reid Supply Corp.

Rocky Mountain Distributor: Great Northern Tool & Supply Co.

THE RIGHT PACKING in the Right Place!

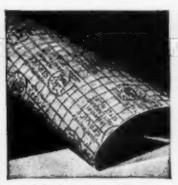
J-M Sea Rings. Absolutely automatic. Save power. Reduce wear on equipment. Last longer.

J-M Kearsarge Rod Packing. Retains its efficiency—note construction of center block.

J-M Centripac. Plaited construction. Specially designed for centrifugal service.

J-M Flax Packings available in various styles to meet a wide variety of service conditions.

J-M Kearsarge Boiler Gaskets assure a perfect seal on handholes, manholes and tube plates.



J-M Service Sheet. Pliable. Resilient. Adaptable to all general sheet packing purposes.

J-M Mogul Packing. An excellent utility packing for general service.

FOR *complete* information on J-M's *complete* line of packings for the oil industry, send for the J-M Packings Catalog. Address Johns-Manville, 22 East 40th St., New York City.

Johns-Manville PACKINGS

For Every Oil Industry Service

Mid-Continent Refinery Runs Remain High for October

By D. H. STORMONT

Mid-Continent refiners during October will again reduce their crude runs to stills by a small amount and will practically duplicate those of October a year ago, according to estimates of refiners at the first of the month. The estimated figure for this month is 534,880 bbls. daily, a decrease of 18,335 bbls. from the September total and thus lengthening the number of months in which the runs have been over the 500,000-bbl. mark to 15. Runs throughout 1936 have exceeded a half-million barrels daily, this being the first year since 1930 in which they have done so.

Although the October total is not an excessively high figure as compared with past Octobers, the failure to recede from this year's August peak of seasonal activity by any great amount is causing stocks of motor fuel to begin rising prematurely. In past years gasoline stocks have usually continued their decline well into October or November before taking an upward trend. This year, according to A.P.I. figures, total stocks of gasoline in the United States increased some 1,200,000 bbls. during the week ending October 3, gasoline stocks in the Mid-Continent increasing about 180,000 bbls. However, this increase may be only temporary, due to rains through the United States, and the remainder of the month may see continued declines in stocks of motor fuel.

GREATEST DECREASE IN OKLAHOMA

Oklahoma shows the greatest amount of decrease, daily runs to stills being decreased by 7,840 bbls. The curtailment in this district is reflected in the majority of the large refineries and many of the smaller plants are decreasing runs by a few hundred barrels. The Okmulgee refinery of Barnsdall Oil Co. will be closed during October and this accounts for a large portion of the decrease. Pure Oil Co., Phillips Petroleum Co. and Cushing Refining & Gasoline Co. are all lowering their runs by small amounts.

Mid-Continent Crude Runs

Average Daily (Barrels)

(Advance estimate compiled by The Oil and Gas Journal)

	1934	1935	1936
January	448,360	426,070	501,600
February	456,619	448,810	519,960
March	465,680	451,510	478,760
April	458,220	467,765	506,775
May	457,165	466,015	513,510
June	459,908	485,015	527,225
July	477,012	494,210	539,370
August	501,750	508,960	557,650
September	499,830	541,080	553,215
October	500,755	533,620	534,880
November	500,445	524,475	.....
December	440,735	511,025	.....

Operation by Refinery Districts

Daily crude runs

	Oct.	Sept.	Decr.
Arkansas	23,275	23,350	75
East Texas	58,710	63,170	4,460
Kansas	123,540	126,640	3,100
N. Central Texas	39,375	39,655	280
North Louisiana	46,650	46,800	150
Oklahoma	148,510	156,350	7,840
Southwest Texas	21,930	22,070	140
W. Tex. Panhandle	72,890	75,180	2,290
Total	534,880	553,215	18,335

North Central Texas also recorded an increase for October. Gainesville Refining Corp. is now operating its new 1,200-bbl. plant at Gainesville, Tex., this new output and an increase of some 600 bbls. at Gulf Refining Co.'s Fort Worth plant serving to lessen the amount of decrease.

The new Gainesville plant will serve to give the Anderson-Kerr pool, 3 miles east of the city, an outlet for its crude since there is no major pipe line outlet from the pool. Tydal Refining Co. is building a new 2,000-bbl. plant and North Texas Oil & Refining Co. plans constructing a 1,000-bbl. plant, both of which will give the pool added outlets. Gainesville is also increasing the capacity of its plant to 3,500 bbls. daily. G. A. Mattson is general manager of the Gainesville Refining Co. and Bob Mahoney superintendent.

EAST TEXAS

The East Texas district recorded the second largest decrease, one of 4,460 bbls. daily. The list of operating plants in this district is practically the same as of last month, as refinery operations settle down to more stabilized conditions. Four plants operating last month are closed down in October, namely Lake Refining Co., Panama Refining Co., Royal Oil & Refining Co. and Wabash Refining Co. Only one of the many plants closed down in that area resumed operation, the Utah Refining Co. at Kilgore.

ARKANSAS AND NORTH LOUISIANA UNCHANGED

Arkansas and North Louisiana refiners are operating on the same schedules as in September, runs in these areas being decreased 75 and 150 bbls., respectively. Increases in daily runs at Shoreline Refining Co. and Henry H. Cross Co. refineries are offset by declines in runs at other plants.

The West Texas and Panhandle district shows a decrease of 2,290 bbls. daily, as the majority of refiners curtailed their runs to stills by slight amounts or held them at September levels. This district during the past two years has become more important as a refining area. In October, 1934, there were 16 operating plants in comparison with the present 23 plants and daily crude runs to stills were approximately 20,000 bbls. less.

Estimated Daily Average Mid-Continent Refinery Crude Runs in October

ARKANSAS

Company and location—	Daily capacity	Av. daily runs Oct.	Av. daily runs Sept.
Berry Asphalt Co., Waterloo	2,000	1,050	1,100
Henry H. Cross Co., Smackover	6,000	5,000	4,500
Lion Oil Ref. Co., El Dorado	12,000	9,000	9,000
Macmillan Pet. Corp., Norphlet	2,500	2,000	2,000
Ouachita Valley Ref. Co., El Dorado	2,500	(*)	(*)
Root Pet. Co., El Dorado	10,000	6,000	6,500
Stephens Ref. Co., Stephens	750	225	250
Total	35,750	23,275	23,350

*Shut down.

EAST TEXAS

Company and location—	Daily capacity	Av. daily runs Oct.	Av. daily runs Sept.
Cascade Ref. Co., Reed Switch	3,000	1,595	1,840
Chief Ref. Co., Gladewater	2,000	150	700
Clay Ref. Co., Arp	2,500	900	1,380
Danciger Refineries, Inc., Longview	10,000	4,000	5,000
East Texas Ref. Co., Longview	10,000	8,000	8,000
General American Ref. Co. No. 1, Gladewater	4,000	3,675	2,795
General American Ref. Co., No. 2, Overton	5,500	3,785	2,910
General American Ref. Co., No. 3, Arp	4,000	1,435	1,760
Hurricane Pet. Corp., Overton	5,000	2,850	2,375
Hurricane Pet. Corp., Arp Ref., Arp	3,000	2,545	2,375
Kilgore Ref. Co., Inc., Kilgore	4,000	1,275	785
Lake Ref. Co., Gladewater	2,500	(*)	540
Master Pet. Co., Waco	1,000	(*)	(*)
Magnolia Pet. Co., Corsicana	5,000	3,500	4,000
Ocean Pet. Corp., Kilgore	3,000	1,340	2,300
Premier Oil Ref. of Texas, Willow Springs	4,000	2,515	3,000
Panama Ref. Co., Kilgore	3,000	(*)	410
Royal Oil & Ref. Co., Kilgore	3,000	(*)	575
Sinclair Ref. Co., Camp Switch	3,500	2,000	2,000
Solvex Refineries, Inc., Gladewater	4,500	2,230	2,580
Southport Pet. Co., Kilgore	5,000	2,065	1,745
Texas Co., The, Dallas	16,000	7,000	8,000
Texas Oil Products Co., Gladewater	3,000	1,635	1,760
Trinity Ref. Co., Gladewater	6,000	2,515	2,600
Tower Ref. Co., Overton	3,000	2,450	2,100
Tyler Texas Ref. Co., Tyler	10,000	1,050	1,360
Utah Refing Co., Kilgore	2,500	200	(*)
Wabash Ref. Co., Gladewater	8,000	(*)	280
Total	130,300	58,710	63,170

*Shut down.

KANSAS

Company and location—	Daily capacity	Av. daily runs Oct.	Av. daily runs Sept.
Barnsdall Oil Co., Wichita	6,000	4,500	4,500
Chase Ref. Co., Chase	1,000	550	550
Cusco Oil & Ref. Co., Chase	3,100	(*)	750
Derby Oil Co., Wichita	8,000	5,000	6,500
Dickey Ref. Co., McPherson	2,500	1,700	1,700
Eldorado Ref. Co., Eldorado	5,000	3,800	4,000
Falcon Ref. Co., Inc., Great Bend	800	650	650
Globe Oil & Ref. Co., McPherson	12,000	7,000	7,000
Kanotex Ref. Co., Arkansas City	12,000	5,500	7,500
Kansas Gasoline Co., Winfield	150	40	40
Kreuger Ref. Co., Laton	150	50	50
National Ref. Co., Coffeyville	8,000	5,500	5,500
Pet. Products Co., Chanute	1,000	800	800
Phillips Pet. Co., Kansas City	18,000	13,400	12,500
Russell Ref. Co., Russell	2,500	800	1,000
Shell Petroleum Corp., Arkansas City	20,000	18,000	18,000
Sinclair Ref. Co., Coffeyville	20,000	8,500	8,500
Sinclair Ref. Co., Argentine	11,000	7,000	7,000
Skelly Oil Co., Eldorado	23,000	17,000	17,500
Socony-Vacuum Oil Co., Inc., Augusta	16,000	15,000	15,000
Standard Oil Co., (Indiana), Neodesha	20,000	5,500	5,100
Vickers Pet. Co., Potwin	3,500	2,700	2,500
Total	193,700	123,540	126,640

*Shut down.

NORTH LOUISIANA

Company and location—	Daily capacity	Av. daily runs Oct.	Av. daily runs Sept.
Acme Ref. Co., Monroe	100	50	50
Atlas Pipe Line Co., Shreveport	12,500	10,000	10,000
Bayou State Oil Corp., Hosston	750	350	350
Griswold Refineries, Shreveport	5,000	1,500	2,000
Griswold Refineries, Sandra	1,000	750	1,000
Louisiana Oil Ref. Co., Bossier City	25,000	20,000	20,000
North Caddo Refinery, Rodessa	1,000	500	500
Pelican Ref. Co., Converse	100	50	50
Rodessa Oil & Ref. Corp., Cedar Grove	7,500	3,700	3,600
Shoreline Oil Co., Lewis	5,000	5,000	4,250
Standard Oil & Gas Co., Superior	5,000	4,750	5,000
Texas Co., Shreveport	1,000	(*)	(*)
Total	69,950	46,650	46,800

*Shut down.

NORTH CENTRAL TEXAS

Company and location—	Daily capacity	Av. daily runs Oct.	Av. daily runs Sept.
Allstate Ref. Co., Thrall	2,500	(*)	(*)
Baird Ref. Co., Baird	2,000	1,300	1,300
Continental Oil Co., Wichita Falls	6,000	4,000	4,100

Company and location—	Daily capacity	Av. daily runs— Oct.	Sept.
Crown Oil Co., Fort Worth..	1,200	700	800
Exchange Pet. Corp., Albany.	800	150	250
Falls Ref. Co., Wichita Falls.	2,000	300	300
Gainesville Ref. Corp., Gainesville	1,200	1,000	(†)
Gratex Ref. & Fuel Oil Co., Graham	500	300	300
Gulf Ref. Co., Fort Worth...	10,000	6,250	5,600
Hightower Oil & Ref. Corp., Brownwood	750	150	150
Jacksboro Ref. Co., Jacksboro	50	50	50
La Salle Pet. Co., Burkburnett	3,500	800	900
Magnolia Pet. Co., Fort Worth No. 1	12,000	5,800	6,000
Marathon Oil Co., Fort Worth.	5,000	4,200	4,330
Norgold Ref. Co., West Olney	400	200	200
Olney Oil & Ref. Co., North Olney	3,500	1,500	1,800
Panhandle Ref. Co., Wichita Falls	4,000	2,100	2,400
Panhandle Ref. Co., Leuders.	1,000	600	700
Pilot Point Ref. Co., Pilot Point	500	100	100
Sinclair Ref. Co., Fort Worth.	5,000	3,000	3,000
Southland Ref. Co., Megargel.	500	200	200
Taylor Ref. Co., Taylor	6,000	800	800
Taxman Ref. Co., Wichita Falls	3,500	2,000	2,500
Texas Pacific Coal & Oil Co., Caddo	1,000	700	700
Tucker Ref. Co., Wichita Falls	250	175	175
Wagoner Ref. Co., Electra ..	6,000	3,000	3,000
Total	79,150	39,375	39,655

*Shut down. †Under construction.

OKLAHOMA

Anderson-Prichard Oil Corp., Cyril	6,000	4,500	4,500
Barnsdall Oil Co., Barnsdall.	6,000	3,500	3,200
Barnsdall Oil Co., Okmulgee.	10,000	(*)	3,200
Bell Oil & Gas Co., Grandfield	4,500	2,400	2,460
Black Gold Ref. Co., Oklahoma City	3,000	2,000	2,000
Champlin Ref. Co., Enid	16,000	6,500	6,500
Continental Oil Co., Ponca City	30,000	19,000	19,000
Cushing Ref. & Gasoline Co., Blackwell	1,700	1,500	1,600
Cushing Ref. & Gasoline Co., Cushing	6,200	2,000	2,500
Deep Rock Oil Corp., Cushing	10,000	9,000	9,000
Eason Oil Co., Enid	5,000	2,500	2,500
Empire Oil & Ref. Co., Okmulgee	4,000	2,500	2,500
Empire Oil & Ref. Co., Ponca City	12,000	9,000	9,000
Globe Oil & Ref. Co., Blackwell	8,000	4,500	4,500
Johnson Oil Ref. Co., Cleveland	6,000	4,200	4,200
Marathon Oil Co., Bristow ..	5,000	2,900	3,000
Mid-Continent Pet. Corp., West Tulsa	40,000	19,700	19,700
Omar Ref. Co., Garber	8,000	2,500	2,500
Peppers Gasoline Co., Oklahoma City	500	500	500
Phillips Pet. Co., Okmulgee..	6,000	3,250	4,800
Pure Oil Co., Muskogee	10,000	7,710	8,500
Rock Island Ref Co., Beckett	6,000	2,500	2,500
Sinclair Ref. Co., Sand Springs	8,000	4,500	4,500
Sooner State Ref. Co., Oklahoma City	700	350	350
Sun Oil Co., Yale	5,000	2,000	2,000
Sunray Oil Co., Allen	7,000	3,000	3,340
Texas Co., West Tulsa	15,000	11,000	11,000
Tide Water Oil Co., Drumright	15,000	12,500	12,500
Triangle Prod. & Ref. Co., Oklahoma City	1,500	800	1,000
S. L. West Ref. Co., Oklahoma City	1,000	200	200
Wilcox Oil & Gas Co., Bristow	6,000	2,000	2,500
Yale Oil Corp., Yale	2,000	(*)	(*)
Total	265,100	148,510	156,350

*Shut down.

SOUTHWEST TEXAS

Amsco Ref. Co., Mirando City	4,500	3,150	3,150
Humble Oil & Ref. Co., San Antonio	5,000	3,000	3,000
Magnolia Pet. Co., Luling ...	8,000	7,100	7,350
Midway Oil & Ref. Co., Pettus	1,000	500	500
Pettus Ref. Co., No. 1 Pettus	1,000	850	600
Pettus Oil & Ref. Co., No. 2, Pettus	1,000	500	600
Pettus Ref. Co., Mathis	1,000	750	600
Phoenix Ref. Co., San Antonio	1,200	1,000	1,100
Phoenix Ref. Co., Bruni	900	450	450
Pioneer Oil & Ref. Co., Somerset	2,000	1,200	1,300
Rado Ref. & Prod. Co., McAllen	500	250	240
Texas Co., San Antonio	3,000	3,000	3,000
Valley Ref. Co., Huntington..	1,000	180	180
Total	30,100	21,930	22,070

*Shut down.

WEST TEXAS AND PANHANDLE

Aero Ref. Co., Pecos	200	100	100
Coltex Ref. Co., Colorado	12,500	7,600	8,000
Concho Ref. Co., San Angelo.	250	100	100
Cosden Oil Co., Big Spring..	12,500	12,000	12,500
Danciger Refs., Inc., Pampa.	6,500	5,500	5,000
Gibson Oil Corp., Magic City	250	150	150
Gulf Ref. Co., Sweetwater ...	7,500	5,300	5,500
Hill Ref. Co., Ballinger	100	(*)	(*)
Howard County Ref. Co., Big Spring	1,500	600	600
McNutt Ref. Co., El Paso ...	2,000	750	750
Moutray Oil Co., Hawley ...	1,200	750	900
Onyx Refining Corp., Hawley	1,200	1,200	1,200
Panhandle Ref. Co., Kings Mill	2,000	1,500	1,600
Phillips Pet. Co., Borger	50,000	20,160	21,000
Shamrock Oil & Gas Corp., Sunray	2,500	1,900	2,000
Standard Oil Co. of Texas, El Paso	14,000	7,100	7,400
Shamrock Oil & Gas Corp., Meldavis	1,600	1,600	1,500
Starlight Ref. Co., Ballinger.	500	150	150
Texas Co., El Paso	2,000	1,000	1,000
Texas Co., Amarillo	4,000	2,800	3,000
West Texas Ref. Co., Pecos..	6,000	500	500
Western Ref. Co., Mertzan ..	1,000	400	400
West Texas Oil & Ref. Co., Sweetwater	40	30	30
Wickett Pet. Co., Wickett ...	2,500	1,700	1,800
Total	126,440	72,890	75,180

*Shut down.

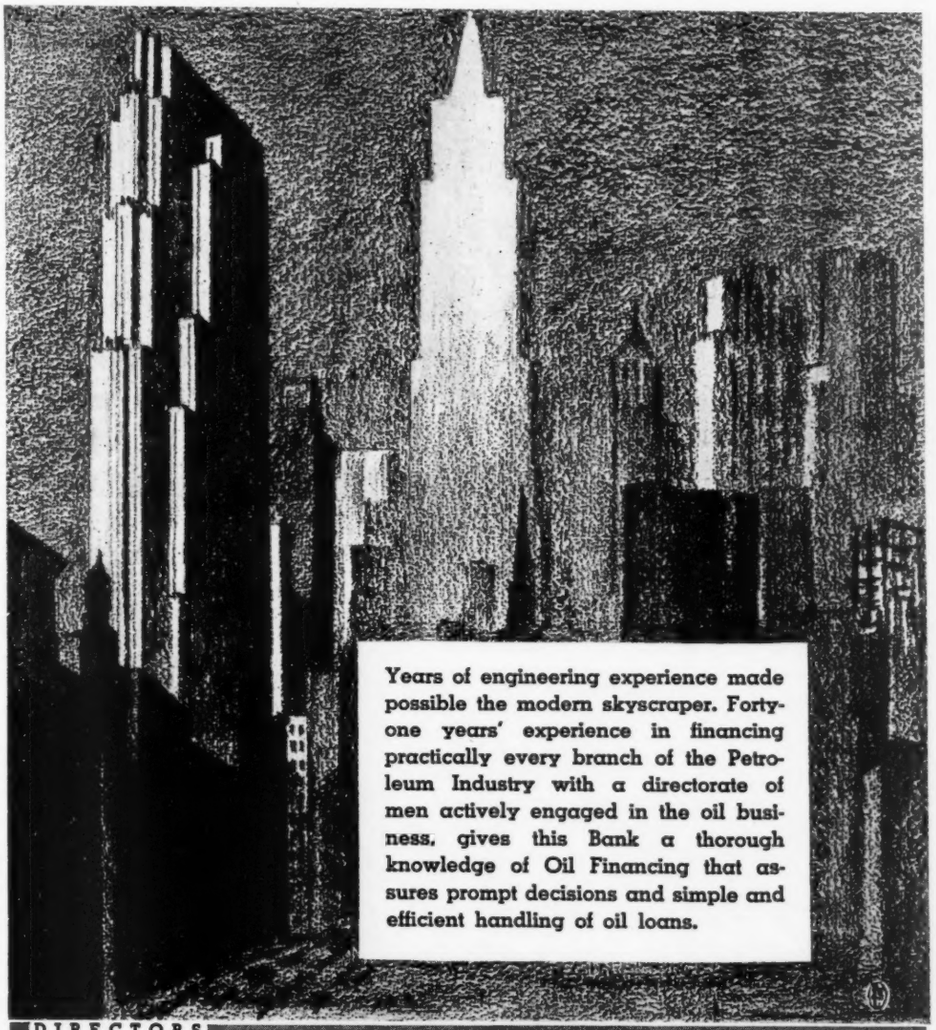
Geology of Organ Mountains, N. M.

The New Mexico Bureau of Mines and Mineral Resources, Dr. E. H. Wells, president and director, Socorro, N. Mex., has recently completed the publication of Bulletin 11 entitled "The Geology of the Organ Mountains with an Account of the Geology and Mineral Resources of Dona Ana County, New Mexico," by Kingsley C. Dunham. Copies may be secured by writing Doctor Wells or the New Mexico School of Mines, Socorro, N. Mex.

Merger and Change of Name

Swiss Oil Corp., Lexington, Ky., parent company to Ashland Refining Co., Ashland, Ky., has purchased the small minority holdings of common stock in the Ashland Refining Co., and will consolidate the two companies, as of October 31, into a new company to be known as the Ashland Oil & Refining Co. The stockholders of the Swiss Oil Corp. will become the stockholders in the new company, share for share.

The plan of consolidation provides also for the authorization of $1,000,000 of 5 per cent preferred stock, of which $500,000 is to be issued at this time.


Years of engineering experience made possible the modern skyscraper. Forty-one years' experience in financing practically every branch of the Petroleum Industry with a directorate of men actively engaged in the oil business, gives this Bank a thorough knowledge of Oil Financing that assures prompt decisions and simple and efficient handling of oil loans.
DIRECTORS
B. F. BARNETT
Vice President
J. P. BYRD, JR
Vice President
M. M. DOAN
Oil Investments
F. L. DUNN
Executive Vice President
A. L. FARMER
Farmer and Duran, Investments
H. N. GREIS
Oil Producer
JOHN D MAYO
Mayon, Incorporated
R. OTIS McCLINTOCK
President
F. B. PARRIOTT
Oil Investments
WAITE PHILLIPS
Investments
W. G. SKELLY
President, Skelly Oil Company
ELMO THOMPSON
Vice President
THE
FIRST NATIONAL BANK
AND TRUST COMPANY
OF TULSA
1895
We Bank on OIL
1936

Ready with DEWEY FIBRED CEMENT

Dewey Fibred Cement, without a single recorded failure, has always assured a *complete circulation of the slurry*, a thorough and uniform cementing throughout the entire column of the well. Porous formations are effectively sealed off, saving oil- and gas-pockets for future use, at a saving in cement.

Dewey Fibred sets in oil or salt water, or under high temperature without ice or other cooling aids. Is more elastic than neat cement, shrinks less, does not channel or crack. Its consistent density is an aid in straightening crooked holes.

For safety, economy—for the difference sometimes between success and outright failure—rely on Dewey Fibred Cement.

DEWEY PORTLAND CEMENT CO.

KANSAS CITY
CHICAGO
TULSA

MINNEAPOLIS
WICHITA

DAVENPORT
OKLAHOMA CITY
DALLAS

DEWEY MASON CEMENT
DEWEY PORTLAND CEMENT
DEWEY 24-HOUR CEMENT

FIELD OPERATIONS

Summarizing the Week's Developments

California operators are looking forward to improved market conditions for the next few months as there is a possibility of a market for 12,000,000 bbls. of crude and refined oil to be exported from California ports bound for foreign countries including Asiatic Russia, Japan, China, Australia, South America and Germany. The parade of tankers in the export trade started in the past week. Two deep wildcats, recently abandoned in California cost their owners over $2,000,000, largely because of mechanical troubles and their attendant costs.

LOUISIANA-TEXAS-ARKANSAS

Twenty-four new locations were made in the Rodessa field in Louisiana and Texas, most of them on the Cass County, Texas, side. Important oil showings in a test in the old Irma field in Nevada County, Arkansas, will result in additional drilling.

TEXAS

The Silsbee Prospect in Hardin County, Texas, where a large oil and gas well burned from August 5 until recently, when by means of a directional well and a flood of water the fire was extinguished, is now the center of interest in the Gulf Coast division in Texas, as the directional well is to be tested for Cockfield sand production. In the Southwest Texas district, new producing areas were opened in Jim Wells, Goliad and Nueces counties; the Saxet and Foley fields were extended and new gas fields were opened in Goliad and Webb counties. A spectacular gas blow-out occurred in Hidalgo County. The gas caught fire and was still burning. In northeastern Texas the Sulphur Bluff field in Hopkins County will have its third producer before the week ends. In the Talco pool in Franklin and Titus counties three new oil wells were completed. In West Texas the Cochran County discovery, heretofore mentioned, was looking better although not yet completed. A wildcat near the New Mexico line in Winkler County was completed, starting at 50 bbls. per hour. It may connect two pools. In the old KMA field in Wichita County, North Texas, a deep pay recently opened was further proven by a well that flowed 226 bbls. in 12 hours.

OKLAHOMA

The Edmond pool, Oklahoma County, Oklahoma, was extended a quarter mile westward with a well starting at 1,700 bbls. of oil in 12 hours from Simpson Dolomite. Another big producer in the Crescent field in Logan County flowed 1,838 bbls. in four hours with the drill pipe in the hole.

KANSAS

A new Lansing lime pool was opened in southwestern Stafford County, Kansas, in section 27-25-14w. It swabbed 158 bbls. of oil in 23 hours from pay at 3,894 feet, total depth, 3,905 feet. A new producing area in the Sellens district, Russell County, was opened in section 17-15-13w, the discovery well flowing 1,276 bbls. in 24 hours after acidizing. A well in section 12-15-18w, with a showing of oil in the top of Siliceous lime looked favorable for another Ellis County pool opened.

ROCKY MOUNTAIN AREA

A well good for 2,956 bbls. was completed in the Lance Creek, Wyoming, field. The Cut Bank field in Montana was extended 3 miles southwesterly and a test in Fallon County, near the North Dakota border, was reported good for 10 to 20 bbls. per hour at 8,186 feet. Lea County, New Mexico supplied its usual number of good wells. Roosevelt County, north of Lea County, will be tested for oil in the Glorietta sand which showed good signs of oil in a former test that had to be abandoned.

Completions in All Fields

(Week Ending October 10, 1936)

	Oil	Gas	Dry	Total	1936 total comp. to date	1935 total comp. to date
Penna. Grade Fields	59	7	10	76	2,615	2,298
Lima Field	0	2	1	3	75	77
Central Ohio	2	5	2	9	281	257
Indiana	1	2	5	8	142	160
Illinois	0	0	0	0	26	11
Michigan	6	3	4	13	491	418
Kentucky	8	0	0	8	215	192
Kansas	20	1	13	34	1,271	968
Oklahoma	25	4	21	50	1,929	1,562
North Central Texas	22	0	14	36	1,937	2,052
West Texas	28	0	2	30	1,175	628
Texas Panhandle	11	1	0	12	513	564
East Central Texas	4	4	1	9	277	189
East Texas	27	0	1	28	1,984	3,504
East Texas border	6	0	2	8	80	8
Gulf Coast Texas	20	1	11	32	915	817
Southwest Texas	50	2	14	66	2,290	1,193
Total Texas	168	8	45	221	9,171	9,025
North Louisiana	8	4	1	13	505	247
Gulf Coast Louisiana	3	0	2	5	283	282
Total Louisiana	11	4	3	18	788	529
Arkansas	0	0	1	1	72	98
Montana	5	0	0	5	177	140
Wyoming	3	0	1	4	79	66
Colorado	1	0	0	1	22	13
New Mexico	11	0	2	13	461	254
Utah	0	0	0	0	5	5
California	17	1	11	29	954	881
Total United States	337	37	119	493	18,774	16,884
Total previous week	331	32	78	441		
Difference	6	5	41	52		

Outstanding Fields—Highlights

(Week Ending October 10, 1936)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
Anahuac	3	8	0	0	118	7,843
Hastings	3	9	1	592	95	5,987
Loma Novia	2	7	5	2,410	594	15,660
Seven Sisters	3	7	8	2,400	297	7,670
Saxet Heights	3	10	3	400	176	8,210
Saxet	3	29	6	1,180	234	19,090
Lopez	3	7	6	2,090	186	4,760
East Texas	38	120	27	1,084	21,467	445,198
Talco	21	25	3	431	74	7,697
OKLAHOMA						
Oklahoma City (Capitol area)	4	13	3	2,078	151	41,524
Oklahoma City (old field)	0	0	0	0	947	106,776
Fitts	11	50	5	4,984	450	56,800
Burbank-So. Burbank	1	10	1	722	2,165	22,950
KANSAS						
Ellis County	3	25	5	4,197	57	2,640
Reno County	3	28	2	3,255	325	16,424
Russell County	8	35	2	2,417	476	16,950
Rice County	5	33	3	5,004	588	29,844
NEW MEXICO						
Lea County	11	75	10	7,606	443	76,730
LOUISIANA-TEXAS						
Rodessa, La.	5	25	5	1,200	299	56,500
Rodessa, Tex.	5	35	6	4,025	70	14,010
Gillis, La.	3	4	3	1,700	58	17,843
Tepetate, La.	2	2	0	0	31	6,123
MICHIGAN						
Porter-Yost	7	9	1	80	410	14,935
Crystal-Montcalm	5	12	1	50	140	4,215

Eastern Field Report

By STAFF CORRESPONDENT

ROUTINE COMPLETIONS, BUT MUCH NEW WORK STARTED

PITTSBURGH, Pa., Oct. 12.—No deep tests were completed in the lower Eastern fields during the past week and completions were mostly routine. Operations totaled 25 of which nine were dry, seven gas wells and nine small producers with an initial production of 56 bbls. a day.

In Athens County, Ohio, N. C. Lieper completed No. 29 Cunningham heirs in section 23, Rome Township, in First Cow Run sand, at 480 feet, as a half-barrel pumper after shot. In the SE quarter of section 13, Ames Township, Carpenter and Glazier drilled No. 13 John Smith through the same formation to 102 feet and it was dry.

In Holmes County, S. J. Bell and others drilled a dry hole on the Harry C. Logsdon farm in section 12, Mechanic Township, total depth 935 feet.

In Licking County, near the west side of Newark City, Newark Township, the Ohio Fuel Supply Co. drilled a failure on the Thomas Richards farm, total depth 2,248 feet. In section 6, Franklin Township, Edmonds and Hazlett's test on the D. C. Cummins farm was dry at 740 feet.

In Meigs County, Clark Jividen and others' test on the J. T. Jividen farm, section 19, Sutton Township, was a failure at 775 feet.

In Monroe County, Francis S. Paulus and others completed a 1-bbl. well on the Paulus farm in section 9, Wayne Township, in the grit at 2,018 feet.

In Morgan County, Lot 2, Windsor Township, J. L. Bachelor and others completed a test on the E. E. Ross farm in the stray sand at 648 feet and it is a 3-bbl. pumper. Nearby in the same lot and township, Charles D. Mosher and others completed No. 9 Charles Yarnell in First Cow Run sand at 665 feet and it is a 5-bbl. pumper. In section 8, Marion Township, W. R. Metcalf and others completed No. 9 Louisa Worthington in First Cow Run at 500 feet and it produced 2 bbls. the first day after shot.

In Muskingum County, Hope Construction & Refining Co. completed a second test on the Edward Morgan farm, section 5, Licking Township, in Clinton sand at 3,174 feet. It produced 25 bbls. the first day after the shot. In the NW quarter of section 19, Newton Township, the Atha Drilling Co. drilled a dry hole on the W. J. Roberts farm through the Medina sand to 3,500 feet.

In Washington County, Otto Heldman and others completed a test on the Ernest Epler farm at Gossett Fork, section 19, Liberty Township, in the Berea sand at 1,987 feet. It is a gas well gauging 150,000 feet a day.

SOUTHWEST PENNSYLVANIA

In Amwell Township, Washington County, Pennsylvania, along the Fifth sand streak, the South Penn Oil Co. completed No. 2 on the J. Q. Zimmerman as a gas well in the Injun sand gauging 1,152,000 feet a day. The total depth was 2,285 feet with the top of the Injun sand at 1,970 feet and gas at 2,020-25 feet. No. 1 was also a good gas well in the same formation, found on neither of the farms on the north and south.

In Greene County, James H. Null, agent, deepened No. 3 David Null, in Springhill Township, to 2,424 feet, Big Injun sand, and it is a gas well gauging 160,000 feet a day.

In Allegheny County, Ferguson & Co. drilled a test on the Wilson heirs farm in Richland Township, and it was dry in all formations. In Hampton Township, O. Miller is drilling at 1,100 feet on the Hancock heirs farm. In McCandless Township, A. Wally is rigging up on the Wamser heirs property. In Kilbuck Township, Charles B. Wachter is drilling on the Mrs. Emma Skees farm and in Ohio Township, H. Riley & Co. are down 800 feet on the Buerhle heirs farm.

In Beaver County, the South Penn Oil Co. reached Berea sand in No. 14 William Taylor, Green Township, with oil showing and the tools stuck in the sand. In this township, a test is being drilled on the Perry Cain farm which is 800 feet deep. In Butler County, E. A. Bream & Co. with J. F. Trees is down 1,850 feet in No. 11 on the J. F. Trees farm in Buffalo Township.

Amwell Township, Washington County, still is the center of the most activity in the southwest Pennsylvania fields. Here the Union Gasoline & Oil Corp. is drilling at 2,790 feet on the Stephen Day farm; 2,767 feet on the Marion Johnson farm, and spudding in the second test on the Martha Hazlett farm. The Carnegie Natural Gas Co. is drilling at 2,020 feet on the R. M. Carrons farm and 1,572 feet on the N. B. Redd farm. A. V. Lewis and others have reached 2,285 feet on the W. Dodd farm, and 1,300 feet on the Mankey farm. The Wise Oil & Gas Co. has a rig standing for No. 2 on the C. W. Dunn farm. Moore-Orrill and others have reached 1,866 feet on the G. L. Walker farm No. 8.

In Greene County, South Penn Oil Co. is drilling out the cement just above the Nineveh Thirty-Foot sand in No. 9 Harvey. The two wells directly in line to the south are oil producers, the J. W. Milliken making about 85 bbls. a day and the Mattie I. Scott 45 bbls. a day.

In Springhill Township, Greene County, Union Gasoline & Oil Corp. has a rig up for No. 6 Strope. Duquesne Oil & Gas Co. is deepening No. 1 Lemley heirs farm. More activity is expected in this township.

In Green Township, Greene County, Amie L. Garard has a rig for No. 7 on her own property. In Aleppo Township, Henry Polen is drilling at 1,150 feet on the O. I. Dille and others lease. In Franklin Township, Charles Mory and others have started drilling the test on the A. J. Lippincott farm. In Richhill Township, the Carnegie Natural Gas Co. is down 3,276 feet on the W. O. Kincaid test.

Deep Tests

The tools were recovered from the deep test of Norwood Johnston and others on the James McBurney farm 2 miles south of Hickory in Mount Pleasant Township, Washington County, and then the bailer was lost in the hole at a depth of 6,140 feet. At present the tools are drilling up the bailer.

On Chestnut Ridge in South Union Township, Fayette County, the deep test of William Snee and others on the Summit Hotel property is drilling in a new hole which may be carried to bottom. It is 4,860 feet deep. Gas is still coming from the old hole which was bottomed at 6,611 feet but in which it was impossible to run the 7-inch casing due to the crooked hole.

In Slippery Rock Township, Lawrence County, Carnegie Natural Gas Co. on the Heichel farm is drilling at 2,200 feet. In Butler County, 1 mile north of Zelienople, the Wittmer-Phillips test on the Paul Fanker farm is drilling at 2,650 feet. In Independence Township, Beaver County, the Laughner-Wittmer test on the William Wilsman farm is drilling at 3,712 feet but has been retarded due to the hard formations.

WEST VIRGINIA

In Hancock County, West Virginia, Carl E. and Elizabeth Hahn completed No. 21 John Linduff in Butler district, in Berea sand at 1,326 feet. It is good for 3 bbls. a day.

In Marshall County, Guy B. and A. C. Patterson completed a 15-bbl. well on the L. Lemasters farm in Liberty district in the Injun sand at a total depth of 1,750-65 feet.

In Ritchie County, the Oil & Gas Co. completed a test on the J. E. Reeser farm in Grant district in the Squaw sand at 1,750 feet. It is rated at 1¼ bbls. a day.

Gas Wells

In Cabell County, the Kentucky-West Virginia Gas Co. completed a test on the S. W. Ray farm in McComas district at a depth of 1,674 feet as a gas well gauging 1,575,000 feet a day. The Big Lime was at 1,440-1,600 feet; the Big Injun 1,669 feet with the gas at 1,670-1,674 feet.

In Gilmer County, the Hope Construction & Refining Co. drilled No. 3,673 on the Stump Simmons farm in Center district through Berea sand to 3,499 feet and bottomed it in slate. It was dry.

In Kanawha County, the United Fuel Gas Co. completed No. 4,627 on the King Land Co. in Elk district in the Big Injun sand at 2,100 feet. It is a gas well gauging 928,000 feet a day.

In Lincoln County, Roy and McComas deepened No. 2 Rush McComas, in Union district, at 3,285 feet. Brown shale was at 2,840-3,270 feet with about 184,000 feet of gas at 2,850-3,200 feet.

In Roane County, Harper district, L. C. Young and others completed No. 2 A. N. Kee 500-acre farm in the Salt sand as a gas well gauging 2,100,000 feet a day naturally. The Salt sand was at 1,725 feet with gas at 1,725-34 feet and again at 1,758-66 feet.

In Tyler County, C. H. Pigott drilled a test on the F. E. Strickling farm on Middle Island Creek in Centerville district in the Big Injun sand to 1,761 feet. It was dry.

Outside Deep Tests

In Wirt County, Godfrey L. Cabot, Inc. is drilling at 2,000 feet on the Julia Blankenship farm scheduled for the Oriskany sand. Glen W. Roberts recovered the tools and is drilling at 1,150 feet on the Roberts Oil Co. lease.

In Geary district, Roane County, Godfrey L. Cabot, Inc. has spudded in and started drilling a deep test on the T. F. Smith farm.

New Work

In Cabell County, Thermal Gas Co. has started drilling on the Claude Perry farm in Grant district. In Calhoun County, G. L. Cabot, Inc. has a location for a test on the Sarah Jones Ferrell farm on the Kanawha River in Sheridan district.

In Lewis County, the McCall Drilling Co. made a location on the Ruby and H. D. Rinehart farm on Fink Creek in Freemans Creek district. It was formerly the H. M. J. Lovell heirs farm.

In Marshall County, Denver Oil & Gas Co. is drilling on the Mary Campbell farm on Fish Creek in Liberty district. In Mason County, J. C. Blair and others have started drilling on the J. M. Heiner farm in Hannan district. In Monongalia County, Harry L. Tennant is drilling No. 6 Wise and Tennant in Battelle district on Miracle Run.

In Pleasants County, Dinsmoor & Co. are drilling No. 8 J. E. Cunningham in McKim district. Clifford Love and others made a location on the John DeLong farm in Grant district.

In Ritchie County, B. F. Gilmore and others made a location on the William F. Moore farm on Stewarts Run in Clay district. In this district on Hughes River, J. C. Smith and others made a

(Continued on Page 154)

Southwest Texas District

By
GEORGE WEBER

FOUR OIL AND GAS FIELDS OPENED; WILD WELL BURNS

HOUSTON, Tex., Oct. 12.—Important developments in Southwest Texas approached record proportions during the past week as new oil and gas discoveries, field extensions and a wild well focused attention on that active drilling area. New oil production was established by well completions in Jim Wells, Goliad and Nueces counties. Goliad County also gained a new gas field, and the Saxet and Foley fields were extended in Nueces and Bee counties respectively. Most spectacular, and not lacking in development importance was the blowout of the Pantana Petroleum and Speed Oil Co. No. 1 Harding in the Mestanas field of Hidalgo County.

Drilling in field and wildcat areas continued heavier during the week, but several abandonments delimited field production and disproved wildcat prospects. Centers of activity continued around Nueces, San Patricio and Jim Wells counties in the lower coastal area, and Duval, Webb and Zapata in the Laredo district. Live Oak, Bee and McMullen counties are scenes of considerable wildcatting and drilling in small fields.

Blowout Causes Crater

The Pantana blowout occurred at the first of the week. Operators were coring at 7,820-40 feet, 60 feet from contract depth and were coming out of the hole with the core when the blowout occurred. Gas seeping to the surface in a large area around the rig and boilers immediately caught fire, and within a short time the crater formed. No injury nor loss of life was sustained, but considerable equipment was destroyed.

Chances of controlling the wild well are slim, due to the fact that the flow of gas, oil and brackish water is coming from several sands. In drilling the well several shows were had in cores. Coarse gray sand at 6,590-6,610 feet had a heavy gas and distillate odor, and the same odor was noted in the greenish gray sand at 7,066-86 feet, sand and shale at 7,089-7,109 feet, sand at 7,509-29 and 7,738-58 feet. A Schlumberger test taken above the section cored showed further gas and oil sand bodies. The presence of oil as shown by the heavy smoke and billowing of the flame constitutes an important factor. The Mestanas area has heretofore produced only gas and distillate, and now shows probable oil production. Soon after No. 1 Harding blew out and caught fire, the pressure decreased with the apparent oil flow, and the test began making quantities of brackish water. This indicates that the hole has bridged above the oil producing sand.

Miocene was encountered in the test from 4,275-4,825 feet, the Marine Oligocene from 4,875-5,190 feet and 2,650 feet of Frio formation was encountered from 5,190 feet to the bottom of the hole. The Frio, which was the only section cored showed several good indications of production, and is probably the section which produced the oil. Considerable development is anticipated in the Mestanas field as a result of the shows from this test. The wild well is expected to bridge, and no steps can be taken under present conditions to control it.

The indicated new oil production in Nueces County was proven during the week by completion of Texon Drilling Co. No. 1 Austin. The discovery well, located 4½ miles south of Agua Dulce in Share 2 of the Chapman Subdivision was brought in cleaning 3 to 5 bbls. of fluid consisting of 60 per cent oil on a one-eighth inch choke. Tubing pressure was recorded at 1,400 pounds and casing pressure at 1,800 pounds. The well is flowing from a total depth of 5,836 feet. The operators moved to a north offset location where the No. 1 Clara Driscoll Sevier will be drilled shortly.

In Jim Wells County, Tom Graham completed the No. 1 Bennett for the discovery well of another new field. The test, taken over by Graham recently was gauged for an estimated 125 bbls. per day on a three-sixteenths inch choke with tubing and casing pressures of 440 and 860 pounds respectively. Sand producing this well was cored at 2,340-50 feet. The wildcat is located in section 76, about 2 miles west of the Premont field. Gravity of the oil was reported to be 22.5 degrees.

New Pool in Goliad

The California Co. met with success during the week in completing the No. 1 Langrebe, Goliad County wildcat, for the discovery of still another oil field. The No. 1 Langrebe, located in the Thomas Hancock Survey about 8 miles north of the town of Goliad was brought in for an estimated 200-bbl. well on a one-quarter inch choke with tubing pressure of 160 pounds and casing pressure of 900 pounds. Sand in this producer was cored at 4,800-07 feet and the oil has a gravity of 43 degrees. The test is bottomed at 5,052 feet. After several production attempts at plugging back to the 4,800-foot sand the well was brought in this week.

In the same county a new gas area was opened by the Felmont Corp. Shortly after taking over the No. 1 Metz, the operators plugged back to 3,460 feet from a total depth of 5,660 feet. The casing was perforated at 3,425-30 feet and a test showed nothing. Casing was then ripped at 3,880-88 feet and screen and liner set. The well was then brought in making an estimated 1,500,000 feet of dry gas. The gauge taken on a one-eighth inch choke showed a working pressure of 1,200 pounds on the tubing and a closed-in casing pressure of 1,500 pounds. None of the new fields have yet been given names.

San Patricio County remained in the spotlight due to the interest concerning the Eleanor Oil Co. No. 1 Kline. The wildcat, which has been a tight well since its start is reliably reported to be resetting screen and liner. The test, bottomed at 6,681 feet, according to report, plugged back to approximately 6,458 feet and was perforated at 6,418-28 feet. Swab was lost in the hole and screen and liner were pulled to recover it. A Schlumberger survey of the hole showed a formation with a resistivity of 26 ohms and a good porosity. Top of the Discorbis was about 5,500 feet, first Marginulina at 6,060 feet, second Marginulina at 6,140 feet and Frio at 6,434 feet. Sand was shown at 6,297-6,380 feet. Considerable interest is manifest in this area by several companies and further development, especially between the wildcat and the McCampbell field a short distance to the northeast, is anticipated shortly.

Nueces County

The most important result of the week's drilling in Nueces County beside the new field discovery was the completion of the W. A. R. Oil Co. No. 1 Buckholt on the south edge of the Saxet field. The outpost test, located 3,000 feet south of the proven area, was completed for 148 bbls. per day on a five-thirty-seconds inch choke from the Clarkwood sand at 4,448-51 feet. Seven-inch casing was set at 4,585 feet. The new well opens considerable new acreage to the Clarkwood sand production. The operators have moved one location east to drill the No. 2 Buckholt, and additional drilling will probably develop the intervening proven area soon.

The Flour Bluff field was further extended by completion of the Barnsdall Oil Co. No. 2 Phillips in Lot 12, section 55. The test, third to be completed in the new field, gauged 198 bbls. per day on a one-eighth inch choke from sand at 6,580-6,645 feet. The Costa Oil Co. No. 1 Henderson was brought in for a gasser in the same field, and will be killed and reworked. To the north in the Clara Driscoll field, Wellington Oil Co. No. 1-A Sevier was brought in and has not yet been gauged.

Operations in Webb, Duval and Zapata Counties continued very active with the Lopez, Seven Sisters, Loma Novia, Haynes and O'Hern fields adding several new producers. The Government Wells field gained another producer in the new deeper sand, as the Southwest Production Co. No. 18 Wendt came in making 20,000,000 feet of gas with a spray of oil from the sand at 2,385-90 feet. In the same field two other producers were completed during the week, marking a small revival of drilling in the field which has seen little activity in the past year. The Colmena field of Duval County gained another producer further extending the new field. El Mesquite received a setback as the Rogers & Rogers No. 2 Pena was abandoned.

Pennsylvania Grade Upheld

The Pennsylvania Grade Crude Oil Association has won a sweeping victory in its first case brought before the Federal Trade Commission, a cease and desist order being granted by the commission restraining a New York company from using the emblem of the association, from advertising that the products marketed were 100 per cent Pennsylvania grade products, and from mis-stating the S.A.E. viscosity numbers in such sales.

USED SUCCESSFULLY IN THE RODESSA FIELD—See Page 26

Central West

Operations in Central Ohio, Kentucky, Illinois, Indiana

By GEORGE A. WHITNEY

FINDLAY, Ohio, Oct. 12.—A wildcat test, drilled by Charles Hunderlick and a group of Tiffin men, on the Irene Cupp farm in section 16, Tymochtee Township, Wyandot County, was completed below the sand at 1,368-1,447 feet, and gauged 500,000 feet of gas and made a small show of oil. The test was drilled about 1,000 feet from the Ohio Fuel Gas Co.'s pipe line and arrangements are being made to tie the gasser in with this line. Extensive operations are being started as a result of this well, which is the largest completed in that part of the field in recent years. In the same county, section 28, Crane Township, Upper Sandusky Oil & Gas Co. No. 4, E. Loverich, was drilled through the sand at 1,337-1,408 feet without a show of oil or gas, and has been abandoned. The same operators are moving a rig on the H. Saltsman property for No. 7, in this same township.

In Hardin County, section 24, Jackson Township, Forest Gas Co. No. 1 John Stevens gauged 30,000 feet of gas in 72 hours after a shot in the Clinton sand at 1,239-43 feet. In section 10, Marion Township, McCaubrey & Co. are rigged up on the E. and H. Scott location.

CENTRAL OHIO

Very few new locations are being staked in the Central Ohio field, at this time. Morgan County, however, is getting a play and two small oil producers were completed in that field in the past week. Mosier & Co. No. 32 Charles Yarnell, in Lot 2, Windsor Township, is a 4-bbl. well after a shot in the First Cow Run sand at 622-44 feet. Same operators are rigged up for No. 33 Yarnell. Bachelor & Co. is drilling No. 9 on the Marie Yarnell property. In section 4, Union Township, Turney & Co. No. 1 Jasper Fitch was completed in the Peeker sand at 205-20 feet and produced one-half barrel the first day after a shot. In section 12, Marion Township, Williams Brothers are spudding on the S. S. Williams property. Joe Pierce No. 2 Charles Nelson, in section 9, Deerfield Township, was drilling at 725 feet. In Fraction 3, Penn Township, Kepple & Co. No. 9 Meda Smith is fishing at 860 feet. The Ohio Fuel Gas Co. is rigged up on the D. H. Phelps lease, in Lot 2, Marion Township.

In Perry County, section 4, Reading Township, Hopewell Gas & Fuel Co. No. 1 Thornton Baker is a Clinton sand gasser at 2,968-99 feet. After being shot with 90 quarts it gauged at the rate of 1,332,000 feet of gas a day. In section 7, same township, Ohio Fuel Gas Co. is rigged up on the W. J. Lehman property and in section 6 same operators are down 2,750 feet on the Harriet Beard lease. In section 25, Coal Township, Kachelmacher estate is building a rig for No. 16 on the Hemlock Coal Co. property. In section 35, Preston Oil Co. No. 141 is down 2,350 feet on the Sunday Creek Coal Co. lease.

Ohio Fuel Gas Co. No. 1 H. B. Belden, in Lot 56, Grafton Township, Lorain County, completed a gas well in second Clinton sand at 2,590-95 feet. In section 28, Avon Township, William Dempsey No. 1 Robert E. Barr was drilled through the first Clinton sand at 2,315-30 feet, and the second Clinton at 2,365-70 feet without a show of oil or gas and has been abandoned. In section 11 the same operator is down 200 feet on the Melvin Barrows property. Edson & Son are drilling No. 2 on the Rueben Chester lease in section 21, same township, at 1,100 feet. In Lot 81, Columbia Township, Ohio Fuel Gas Co. is down 2,439 feet on the A. D. Carpenter farm.

In Summit County, section 31, Green Township, East Ohio Gas Co. No. 1 Freeman Daily gauged 786,000 feet of gas after a shot in Clinton at 4,073-88 feet.

In Holmes County, section 20, Monroe Township, Ohio Fuel Gas Co. No. 1 Burgess Bird had Clinton sand at 3,165-3,211 feet and is a commercial gas well. In section 17, Washington Township, East Ohio Gas Co. No. 1 is being drilled in on the Barnhart & Lifer property. Bell Brothers No. 2 A. and H. Logsdon is down 740 feet in section 12, Mechanic Township.

East Ohio Gas Co. No. 2 John and L. Heppe, in section 9, Jackson Township, Stark County, was dry in Clinton at 4,184-4,268 feet and was abandoned. In section 4 the same operators are down 3,200 feet on the Amanda Smith property. Ohio Fuel Gas Co. No. 1 Arthur Clay, in section 28, same township, was completed as a commercial gas well in second Clinton at 4,188-4,207 feet. The same operators are spudding on the C. J. Buchtel farm in section 4. In Perry Township, section 12, Blake & Fawcett are down 4,100 feet on the Indianola Estate property.

In Tuscarawas County, section 3, Sandy Township, East Ohio Gas Co. No. 1 Eva Price was drilled through the first Clinton at 4,818-44 feet with a good show of gas, was drilled through the second Clinton at 4,862-71 feet, which was dry, and after being plugged back and shot, gauged 1,058,000 feet of gas. In Lot 2, same township, James Upham is down 4,840 feet on the A. C. Ehler property.

In Ashland County, Lot 49, Sullivan Township, Ohio Fuel Gas Co. is moving a rig on the E. E. Drake location. The same company is down 1,570 feet on the George Perko lease in section 16, Orange Township. In section 17, Jackson Township, Preston Oil Co. is below 475 feet on the J. C. McFadden farm. In section 2, Hanover Township, Ohio Fuel Gas Co. is spudding on the J. W. Mutchler property.

KENTUCKY FIELDS

The town lot drilling in Livermore, Ky., and the recent completion of a 21,000,000-foot gas well by Cumberland Petroleum Co. and Snowden & McSweeney, near Sacramento, are attracting oil men from Texas, Oklahoma and other western fields to this new prolific area. It is the belief of operators in this district that another great basin field has been found with the discovery of this large gas well in McLean County, and may result in some deep tests for oil.

Eight producers were completed in Livermore this past week and there is no apparent decline in activity. The Sunflower Oil & Gas Co. No. 1, on the Graham lot, produced 40 bbls. the first day. On the Otto Atherton lot, Lion Oil Co. No. 1 had an initial of 40 bbls. B. B. Oil Co. No. 1 Frezzel lot also started at 40 bbls. Kentucky Producing Co. No. 1 Porter produced 50 bbls. the first 24 hours. On the J. S. Bayne property, also in Livermore, Lion Oil Co. No. 1 had an initial production of 30 bbls. Barret & Robbins No. 1, on the Mary Underwood lot, produced 20 bbls. the first day. On the Cokely and Quigg lots, B. B. Oil Co. completed a 90-bbl. producer. Lion Oil Co. No. 1 R. Buchanan had a production of 50 bbls. the first 24 hours.

Total runs made from wells served by the Illinois Pipe Line Co. in western Kentucky, during the month of September was 120,750.77 bbls., a decline of 1,463 bbls. from July.

INDIANA

The Indiana division of geology has announced that several cases of illegal plugging have been turned over to the legal investigator of the department of conservation. It was explained that these rather extreme measures were taken only after repeated failure of various oil and gas companies to comply with the laws and "although this department is

(Continued on Page 159)

ALLEGHENY STEEL PIPE

The weld is just as strong as the pipe itself. Easy-working qualities are *built* into this strong, clean-grained pipe. You can safely shape and form it to suit *any* piping job . . . that's one of the reasons why Allegheny Pipe has been a favorite in field and refinery for more than thirty years.

ALLEGHENY STEEL COMPANY

BRACKENRIDGE, PA.

Sales Offices and Warehouse Stocks in the Principal Cities

ALLEGHENY PRODUCTS: SHEETS FOR AUTOMOBILE BODIES, METALLIC FURNITURE, DEEP DRAWING—ALLEGHENY METAL—ALLEGHENY STAINLESS STEELS—ELECTRICAL SHEETS—STEEL CASTINGS—SEAMLESS TUBING—BOILER TUBES—PIPE

RED BALL CUTTING SERVICE

Don't Fish▲▲▲
Cut it Out!

and you'll be back drilling in a clean hole quicker, and with less cost than by any other method of combatting stuck drill pipe.

J. S. Abercrombie Co.
21st FLOOR GULF BLDG.
HOUSTON – TEXAS

HOMCO
is Gulf Coast Distributor
for
HINDERLITER PRODUCTS

Branches: Victoria, Anahuac, Kilgore, Corpus Christi, Freer, Sam Fordyce, Talco . . Texas

HOUSTON OIL FIELD MATERIAL CO. INC. HOUSTON, TEXAS

Branches: Lake Charles and Houma, La. Other Stocks at Convenient Points

"Cutting and Fishing Tool Service"

McNEELY
Vibrating
MUD SCREEN

Efficient service for a long period of time at lowest operating and maintenance costs is one of the many outstanding advantages of the McNEELY Vibrating Mud Screen. A curved screen surface (exclusive) provides for rapid removal of waste cuttings; a vibrating force transmitted *equally* to all parts of the screen, eliminates dead spots, and compact construction saves room.

Ask your Supply House, write for Catalog or see page 1279, Composite Catalog, for full particulars.

VERNON
TOOL CO., Ltd.
2740 EAST 37th STREET
LOS ANGELES, CALIF., U. S. A.
Gulf Coast and Mid-Continent Representatives
BAROID SALES CO., HOUSTON
EXPORT
The National Supply Corp. - Oil Well Supply Co.

Among Gulf Coast Drilling Contractors

Smith & McDannald, who recently completed an east extension well to the Dickinson field for Pan American Production Co., received the contract for a second well and have cemented conductor pipe at 150 feet. In the same field, No. 1 Jones being drilled for the Pure Oil Co. is below 4,290 feet. In other parts of the district, including south Houston, Louise, Liberty County, Sorrento and Cayuga, six rigs are active for the Stanolind Oil & Gas Co., Pan American Production Co., and Tide Water Oil Co.

Rutherford Drilling Co. marked up another good producer at the Van Vleck field in Matagorda County for the Skelly Oil Co. by the completion of No. 9-B Cobb, which flowed 550 bbls. per day through a quarter-inch choke with tubing pressure 8,222 pounds. For the same company No. 11-B Cobb is drilling in shale below 3,800 feet.

Cron & Gracey is preparing to complete a well at Iowa for Shell Petroleum Corp.; is drilling below 9,100 feet for the same company on a wild cat in Galveston County and has five other rotaries located as follows: One at Flour Bluff for Barnsdall Oil Co., one at west Columbia for Texas Co., one at St. Martinsville for Continental Oil Co., one at Manvel for Texas Co. and one at the Amelia field for the same company.

Edwards Drilling Co. is drilling below 2,890 feet on No. 1 Howard at the Cotton Lake field for Humble Oil & Refining Co. and is below 4,700 feet on Kirby Petroleum Co. and Woodley Petroleum Co. test located at the Sour Lake field in Hardin County.

Glenn H. McCarthy completed his No. 2-A Longe in the Amelia field for a producer and is moving the rig over for another test. At Cotton Lake in Chambers County his No. 3 Kilgore was completed for a producer and the rig is also being moved to a new location. His three rigs, which have been used in developing the R. M. White lease at the Anahuac field for Humble Oil & Refining Co., will probably be moved to the Amelia and Cotton Lake fields as Humble Oil & Refining Co. will do its own drilling since its recent purchase of McCarthy's interest in that part of the field.

Nicklos Drilling Co. is tearing down the rig on the No. 2 P. W. Miller at Tepetate after completing it for a producer for the Continental Oil Co. For the same company No. 7-A Homeseekers is nearing the oil sand and should be completed by the first of next week. For Pan American Production at Port Barre, No. 1 Garland is bottomed at 3,674 feet and a production was scheduled to be made.

Rowan Drilling Co. has spudded No. 2 Manhattan Fruit Co. in Plaquemines Parish for Tide Water Oil Co.; is preparing to spud a wildcat in Refugio County for the same company, and has two active rigs at the Monument area in New Mexico.

Recent rains in the lower Gulf Coast district have curtailed drilling operations in that particular area during the past two weeks and conditions are just now getting back to normal. W. H. Harrison Drilling Co., Inc., has several rigs in the Magnet area in Wharton County and has just begun drilling operations on two wells, while progress around the discovery well of the Magnet field is still held up. Those rigs which are active are being drilled for the Texas Crusader Oil Co. and situated at the Pickett Ridge field and on the Lane City wildcat prospect, both in Wharton County.

In the southwestern part of the Gillis field, Fohs Oil Co. No. 13 O. H. Castle was completed through perforated casing at 7,021-31 feet for an initial production of 550 bbls. of oil per day through a quarter-inch choke. Three new locations were announced for the field by Union Sulphur Co. They are Nos. 10, 11 and 12 Barbe in section 1-9s-8w.

On the west flank of the Jennings field, Superior Oil Producing Co. is rigging up No. 1 Eunice Crowley, north of the company's No. 1 Leckett, which last week opened the first west flank production in the field, while to the south location is being cleared for No. 1 Jennings Heywood, in section 41-9s-2w.

On the South Jennings Prospect, Jefferson Davis Parish, Stanolind Oil & Gas Co. were unable to recover stuck drill stem in No. 1 Calcasieu National Bank and the operators plugged back from a depth of 9,944 feet, sidetracked and are drilling in a new hole below 9,316 feet. The well is south of the town of Jennings on a block of 6,500 acres in section 15-10s-3w. The district's deepest wildcat, Continental Oil Co. No. 1 Hebert, located on the Abbeville Prospect, Vermilion Parish, has recovered all but 600 feet of stuck drill pipe stuck on bottom at 11,732 feet and unless further trouble is encountered the hole is expected to be drilling ahead before the end of the week.

In the southern part of the Roanoke field, Jefferson Davis Parish, Humble Oil & Refining Co. No. 5 Devilbiss topped broken sand showing oil and gas at 8,676 feet and was running casing preparatory to testing at a depth of 8,694 feet. In the same field, Shell Petroleum Corp. is moving in material for No. 6 Kratzer located 1,341 feet west and 660 feet south of the NE cor. NE section 12-9s-4w.

Approximately 1,800 feet south of production in the Lafitte field, Texas Co. No. 5 Rigolettes Fur Co. is drilling in shale and shells below 10,642 feet. Several showings of oil and gas have been encountered below 10,000 feet which no doubt will be tested if no deeper showings are encountered. Location is in section 29-17s-24e.

Another interesting wildcat was announced for the district by Shell Petroleum Corp. No. 1-B Realty Co., on the Bayou-Cocotriz Prospect in the central part of Terrebonne Parish. Location is 440 feet northeast of the southwest corner and 425 feet southeast at right angles to the west line of section 18-17s-15e.

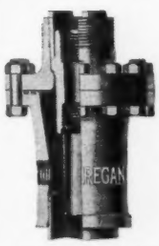
REED'S
'B-R'
DRILLING BIT WITH
WIRE LINE RETRACTABLE
CORE BARREL

REED 'B-R' Drill Collar and 3-Blade Drilling Bit With Core Barrel in position

HARD FORMATION HEAD
(INTERCHANGEABLE WITH SOFT FORMATION HEAD)

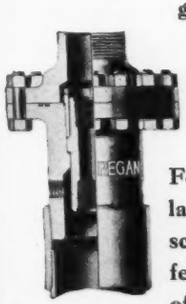
REED
ROLLER BIT CO.

Regan G C Tubing Heads



Regan G C Tubing Head MODEL 3

These improved tubing heads permit you to adjust the length of the tubing at any time when changing conditions of flow in the producing zone require a re-adjustment of gas-oil ratios.



Regan G C Tubing Head MODEL 1

For full particulars ask for descriptive bulletin featuring removal of tubing under pressure.

Regan
Forge & Engineering Co.
San Pedro California

New York Office: 17 Battery Place, Geo. R. Woods, Mgr. *Kansas and Oklahoma Representatives:* Mid-Co Tool & Supply Co., 1008-12 S.E. 29th Street, Oklahoma City, Okla. *Mid-Continent Representatives:* Bettis Sales Co., 516 Merchants & Mfgrs. Bldg., Houston, Texas.

Rocky Mountain Area

MONTANA SUPPLIES FEATURE WELLS; CUT BANK EXTENDED

By T. R. INGRAM

DENVER, Colo., Oct. 12.—The William E. Hughes Estate is preparing to make a pumping test of all the wells drilled in the mystery field in Archuleta County, Colorado, operated by the estate and then shut down for the winter and build a pipe line to railhead in the spring. A small well was completed in the Boulder field. Litigation has been started in Montezuma County to quiet title to the discovery well in McElmo Canon drilled into production several months ago.

The Ohio Oil Co. abandoned its No. 1 Stiles, a wildcat in Albany County, Wyoming. Wildcats spotted during the week include a test on the Little Laramie structure, Albany County, by the California Co., and the Ohio Oil Co. test at Jay Elm in Goshen County. These wells were completed in Lance Creek, the best being the Ohio Oil Co. No. 1 Lamb for 2,956 bbls. The Continental Oil Co. No. 1 Rohlf will be a small producer.

The Cut Bank field in Montana was extended 3 miles to the southwest in Patterson's No. 1 Chatterton, which swabbed 98 bbls. the first 24 hours. The Dakota-Montana Utilities Co.'s Baker-Glendive test in Fallon County is reported making 10 to 20 bbls. an hour at 8,186 feet. Cut Bank had two completions and no new locations and the Kevin-Sunburst had two completions and four new locations.

NEW MEXICO

Southeastern New Mexico completions included six wells in the Monument field, three at Eunice, three elsewhere in Lea County and one in Eddy County.

Largest of the new wells was Sun Oil Co. No. 2 Adkins, C SE SW section 3-21-36, in the Eunice field. After acid treatment, it flowed 2,328 bbls. of oil through 1-inch choke on tubing in 24 hours. It was bottomed at 3,872 feet, in pay topped at 3,782 feet. Gulf Oil Corp. No. 1 Orcutt "C," C SE SE section 6-21-36, flowed 438 bbls. of oil in 24 hours after acidizing, and gas gauged 2,000,000 feet. It had pay at 3,765-3,870 feet, total depth. Same operator's No. 3 Collins, C SW NE section 14-21-36, had pay at 3,775-3,860 feet, total depth, and after acidizing flowed 285 bbls. of oil in 24 hours.

In the Monument field, Amerada Petroleum Corp. No. 2 State "L," C SE NW section 20-19-37, had natural production of 600 bbls. of oil through 1-inch tubing choke in 24 hours, producing from pay at 3,882-4,020 feet. Same operator's No. 2 State "R," C SE SW section 29-19-37, had pay at 3,808-3,930 feet, total depth, and produced 362 bbls. of oil naturally through tubing choke. Skelly Oil Co. No. 2 State "E," C NE NE section 29-19-37, was completed at 3,970 feet, total depth, in pay topped at 3,825 feet, and flowed 216 bbls. naturally through tubing. Ohio Oil Co. No. 3 Barber, C SE SW section 32-19-37, flowed 1,632 bbls. of oil after acid treatment, producing through 1-inch tubing on choke. Gas gauged 1,500,000 feet. It had pay at 3,805-95 feet, total depth. Tide Water Oil Co. No. 1 Laughlin, C SE NW section 4-20-37, flowed 1,224 bbls. through 1-inch tubing choke from pay at 3,840-3,905 feet, total depth. Texas Co. No. 4 Phillips, C SE NW section 6-20-37, was acidized and produced 113 bbls. of fluid, cutting three per cent water, in 24 hours from pay at 3,814-3,910 feet, total depth.

Other Lea County completions: Skelly Oil Co. No. 1 Ella Simms "A," C SW SE section 3-23-37; pay, 3,500-3,622 feet, total depth; shot with 90 quarts; flowed 408 bbls. through choke on tubing in 24 hours. Same operator's No. 1 Stuart, C NE NW section 15-25-37, had a junked hole and was abandoned at 3,416 feet, total depth. National Securities Oil Corp. No. 1 Linam, NE SE SW section 33-18-37, wildcat, in the Hobbs district, was dry and abandoned at 4,506 feet, total depth. This was an old well deepened from 4,280 feet to 4,506 feet and plugged back to 4,228 feet. Sulfur water intruded.

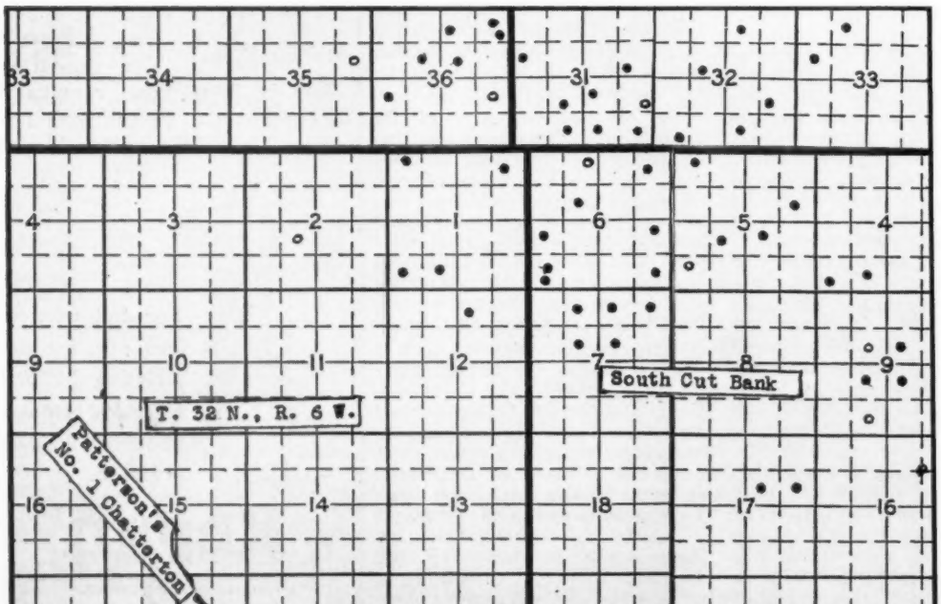
In the Jackson area, Eddy County, Grayburg Oil Co. No. 7 Burch, C NW NE section 19-17-30, was acidized and produced 343 bbls. of oil through tubing in 24 hours. It had pay at 2,692-3,153 feet, total depth.

Roosevelt County

Roosevelt County, which lies directly north of Lea County and immediately west of Cochran and Bailey counties, Texas, is showing considerable activity at the present time and extensive leasing is in progress, principally by the major companies. The Amerada Petroleum Corp. is shooting all of the country east of Claudell to the state line and south to Lingo, and Wirt Franklin is drilling a test just west of Melrose, to the north of Claudell. Another test is to be drilled on the Claudell structure by the Clovis Corp., of 60 Broadway, New York, in the SE NE section 17-2s-30e, for which rig is being moved in.

This last-named operation is of particular interest on account of its relation to a wildcat drilled in 1934 and 1935 by the Claudell Development Co. in its No. 1 Wilmes, C SW SE section 21-2s-30e.

In this well the Glorietta, topped at 3,626 feet and located down structure about 110 feet, had between 8,000,000 and 10,000,000 feet of wet gas and a little brown sweet oil. However, being immediately on the oil-water line, only 4 feet was productive, the balance of the 40 feet drilled showing salt water. In view of the fact that the geophysical work of the Caudill brothers, as well as the check of Dr. W. P. Jenney, of Houston, shows an approximate rise to the northwest of 100 feet, the second well is being located in section 17, allowing the maximum structural rise on the Glorietta sand. It is the purpose of the Clovis Corp. to make a complete production test of both the lime and the Glorietta sand and therefore Paton Brothers, drilling contractors, are to carry the 10-inch hole to the top of the San Andreas lime and drilling will be carried to a total depth of 3,600 feet, or production at a lesser depth.



Patterson No. 1 Chatterton is a 3-mile extension of the Cut Bank field in Montana

Monument Area

Anderson-Prichard Oil Corp. No. 2 Britt "A," C NE SW sec. 6-20-37. T.D. 3,724 ft.; set 7-in. csg.

Gulf Oil Corp. No. 1 Ketter, C SW SE sec. 20-19-37. T.D. 4,007 ft.; acidized; flowing 12 bbls. per hour, tubing.

Texas Co. No. 3 State-Aggies, NE cor. sec. 20-20-37. T.D. 3,498 ft.; drlg. at 3,656 ft.

Gulf Oil Corp. No. 2 Culp "B," C NE SE sec. 31-19-37. T.D. 3,800 ft.; set 5 3/16-in. csg.

Gulf Oil Corp. No. 7 Graham-State "C," C SW NE sec. 25-19-36. T.D. 3,975 ft.; testing.

Shell Pet. Corp. No. 1 State "H," C NE SE sec. 20-19-37. T.D. 3,984 ft.; flowed 240 bbls. in 24 hrs.; acidized.

Amerada Pet. Corp. No. 3 Lambert, C NE NE sec. 6-20-37. Drlg. 3,447 ft.

Tide Water Oil Co. No. 1 State "I," SW SE SW sec. 16-20-37. Drlg. 3,364 ft.

Continental Oil Co. No. 4-A-3 Reed, C SE SE sec. 3-20-36. Drlg. 3,820 ft.

Gulf Oil Corp. No. 8 Graham-State, C NW SE sec. 25-19-36. Derrick.

Amerada Pet. Corp. No. 3 Andrews, C SE NE sec. 11-20-36. Drlg. 2,758 ft.

Amerada Pet. Corp. No. 4 Andrews, sec. 12-20-36. Drlg. 1,830 ft.

Amerada Pet. Corp. No. 1 Theo. Anderson, sec. 8-20-37. Rigging up rotary.

Empire Oil & Ref. Co. No. 1-F State, sec. 30-20-37. Rig.

Gulf Prod. Co. No. 1 Whitmore, sec. 8-20-37. T.D. 1,079 ft.; set 7⅝-in. csg.

Gulf Oil Corp. No. 2 Kutter-State "B," C SW NW sec. 38-19-37. Rig.

Gulf Oil Corp. No. 2 Williams, C SW SE sec. 29-19-37. Rig.

Gulf Oil Corp. No. 3-B Culp, C SE SE sec. 31-19-37. Rig.

Atlantic Pet. Corp. No. 1 Crutchfield, C NE SE sec. 33-19-37. Cellar and pits.

Empire Oil & Ref. Co. No. 2 Laughlin, C SW SE sec. 5-20-37. T.D. 260 ft.; set 12½-in. csg.

Ohio Oil Co. No. 4 Barber, C NE SW sec. 5-20-37. T.D. 160 ft.; set 12½-in. csg.

Ohio Oil Co. No. 5 Barber, C NW NW sec. 5-20-37. T.D. 155 ft.; set 12½-in. csg.

Tide Water Oil Co. No. 2 Anderson, C NE SE sec. 8-20-37. Cellar and pits.
Gulf Oil Corp. No. 1 Kutter "B," C SW SW sec. 21-19-37. Drlg. 3,857 ft.
Gulf Oil Corp. No. 1 Love, C SW SE sec. 32-19-37. T.D. 3,775 ft.; set 5½-in. csg.
Skelly Oil Co. No. 2 State "F," C SW SE sec. 17-20-37. Cellar and pits.
Amerada Pet. Corp. No. 1 State "W," C SW NE section 20-19-37. Moving in.
Sun Oil Co. No. 1 Laughlin, C NW SW sec. 4-20-37. Cellar and pits.
Sun Oil Co. No. 2 Laughlin, C NE SE sec. 5-20-37. Cellar and pits.
Phillips Pet. Co. and Anderson-Prichard Oil Corp. No. 1 Hobbs, C NE SW sec. 18-20-37. Cellar and pits.

Eunice Area

Mid-Continent Pet. Corp. No. 2 Marshall, C NW NW sec. 11-21-36. T.D. 3,845 ft.; testing.
Gulf Oil Corp. No. 11 Arnott-Ramsey "C," C NE SE sec. 21-21-36. Drlg. 3,796 ft.
Gulf Oil Corp. No. 1 Sunshine, C SW SW sec. 30-20-37. Drlg. 3,069 ft.
Skelly Oil Co. and Sun Oil Co. No. 1 Adkins, C SW SW sec. 3-21-36. Drlg. 3,565 ft.
Continental Oil Co. No. 2-D-11 State, C SW SW sec. 11-21-36. Drlg. 3,551 ft.
Continental Oil Co. No. 3-D-11 State, C SE SW sec. 11-21-36. T.D. 3,850 ft.; set 5½-in. csg.
Jim Murray et al No. 3 Wallace, C SE NW sec. 3-21-36. Drlg. 3,707 ft.
Gulf Oil Corp. No. 2 Orcutt "C," C NE NE sec. 6-21-36. Rigging up rotary.
Humble Oil & Ref. Co. No. 6 Knox, C NE SE sec. 10-21-36. T.D. 1,458 ft.; set 7⅝-in. csg.
Gulf Oil Corp. No. 2 Harry Leonard, C NE SW sec. 22-21-36. Drlg. 3,790 ft.; set 6½-in. csg.
Shell Pet. Corp. No. 1 State "K," C NE NE sec. 36-20-36. Drlg. 2,870 ft.
Humble Oil & Ref. Co. No. 5 State-Aggies, C NE SW sec. 21-20-37. Drlg. 3,750 ft.
Continental Oil Co. No. 4-B-14 Lockhart, sec. 14-21-36. Drlg. 263 ft.
Continental Oil Co. No. 3-B-18 Meyer, sec. 18-21-36. Drlg. 1,242 ft.
Gulf Prod. Co. No. 1-D Bell-State, sec. 6-21-36. T.D. 1,310 ft.; set 7⅝-in. csg.
Gulf Prod. Co. No. 1-E Bell-State, sec. 11-21-36. Rig.
Gulf Prod. Co. No. 3 Harry Leonard, sec. 22-21-36. T.D. 973 ft.; drill pipe stuck.
Sun Oil Co. No. 3 Akens, sec. 3-21-36. T.D. 1,190 ft.; fsg.
Repollo Oil Co. No. 1 Berryman, sec. 11-21-36. T.D. 3,882 ft.; acidized; swbd. 63 bbls. in 9 hrs.; testing.
Texas Co. No. 4 State Aggies, C NW SE sec. 31-20-37. Drlg. 301 ft.
Sun Oil Co. No. 4 Akens, C NE SW sec. 3-21-36. T.D. 290 ft.; set 12½-in. csg.
Gulf Oil Corp. No. 6 Orcutt, C SW NE sec. 6-21-36. Rigging up rotary.
Atlantic Oil Prod. Co. No. 3 State "L," C SW NW sec. 6-21-36. Bldg. rig.
Continental No. 15-B-4 Meyer, C NE NW sec. 4-21-36. T.D. 3,743 ft.; set 5½-in. csg.
Texas Pacific Coal & Oil Co. No. 2 State "A," Acct. 2, C NW SW sec. 5-22-36. Drlg. 3,030 ft.

Sims Area

Empire C. & R. Co. No. 1 Walden, C SE NW sec. 21-22-37. Drlg. 120 ft.
Penrose & Rowan No. 3 Cary, C SE NW sec. 22-22-37. T.D. 1,305 ft.; waiting on tools.
Continental Oil Co. No. 1-A-15 Elliott, SE SE SE sec. 15-22-37. Drlg. 3,395 ft.
Continental Oil Co. No. 1-A-21 Elliott, C SE SE sec. 21-22-37. T.D. 3,559 ft.; flowing 125 bbls. per day while cleaning out.
Samedan Oil Co. No. 1 Hughes, C NE SW sec. 4-23-37. T.D. 3,636 ft.; swabs 40 bbls. daily.
Ohio Oil Co. No. 1 Walden, C NE NE sec. 21-22-37. T.D. 3,636 ft.; C.O.
W. H. Street et al No. 1 Wood, C W½ SE NE sec. 22-22-37. Drlg. 1,150 ft.
Amon G. Carter No. 1 E. M. Elliott, sec. 22-22-37. Loc.
J. E. Farrell No. 1 E. W. Walden, sec. 15-22-37. T.D. 250 ft.; set 12½-in. csg.
J. E. Farrell No. 1-A Walden, C SW NW sec. 15-22-37. Drlg. 90 ft.
Repollo Oil Co. No. 2 Ollie Boyd, sec. 23-22-37. Cellar and pits.
Skelly Oil Co. No. 1 G. W. Sims, sec. 10-23-37. Drlg. 2,465 ft.
Skelly Oil Co. No. 1 W. P. Sims, sec. 10-23-37. Drlg. 2,650 ft.

Cooper Area

Southern Oil Corp. No. 1 Gates, C SW NW sec. 23-24-36. Drlg. 3,498 ft.
Skelly Oil Co. No. 6 Coates, C NE SW sec. 3-24-36. T.D. 3,582 ft.; testing.

Lea County—Miscellaneous

Landreth Prod. Co. No. 1 J. W. Grizzell, C SE SW sec. 5-22-37. T.D. 3,780 ft.; flowed 20 bbls. of oil per day, 160 bbls. water.
Rowan et al No. 1 Mattern, C SW SE sec. 8-22-37. T.D. 3,789 ft.; recemented 6⅝-in. csg.
C. & G. Oil Co. No. 1 E. Weir, C NE NE sec. 14-20-37. T.D. 4,075 ft.; to pull 5½-in. csg.
Gulf Oil Corp. No. 1 L. M. Buffington, C SW SW sec. 13-25-37. T.D. 3,903 ft.; P.B. to 3,389 ft.; testing.
Williams & Cockburn No. 3 Miller, C SW SW sec. 23-17-32. T.D. 2,526 ft.; S.D.
Argo Royalty Co. No. 1 Lanehart, SW SE NE sec. 21-26-37. Drlg. 3,500 ft.
Magnolia Pet. Co. No. 1 Scharbauer-Edison, C NW NE sec. 29-16-35. Drlg. 5,140 ft.
Magnolia Pet. Co. No. 2 C. E. Carson, C NW NW sec. 33-21-37. T.D. 3,633 ft.; set 7-in. csg.
Republic Prod. Co. No. 2 Crosby, NW NW SW sec. 28-25-37. T.D. 3,460 ft.; swabbing.
Stanolind O. & G. Co. No. 1 Langley, sec. 15-25-37. Drlg. 3,172 ft.
Emperor Oil Co. No. 1 State, C SW SW sec. 5-21-36. Drlg. 2,150 ft.
Leonard No. 3 Lanehart, C NE NW sec. 21-25-37. Moving in material.
Talbot-Mullineaux No. 1 Quincy-Ricker, C SE SE sec. 7-16-36. Wildcat; S.D. 200 ft.
J. C. Clower No. 1 Turner, C SE SE sec. 29-21-37. Drlg. 2,450 ft.
Culberson-Irwin & Stovall No. 2 Stuart, NW SE SE sec. 10-25-37. Drlg. 2,055 ft.
Continental Oil Co. No. 1-A-30 Eaves, C NE NE sec. 30-26-37. Drlg. 3,068 ft.
Samedan Oil Co., No. 2 Hughes, C NW SE sec. 4-23-37. Cellar and pits.
Continental Oil Co. No. 1-A-24 Sholes, C SE SE sec. 24-25-36. Rig.
Brown & Reynolds No. 1 Parcell, C NW SE sec. 8-21-38. Wildcat. Drlg. 760 ft.
Baldridge and others No. 1 Blakey, C NW NE sec. 5-20-38. Wildcat. T.D. 1,645 ft.; S.D.
Rushwold Oil Co. No. 1 Carter, C NW NE sec. 30-20-39. Wildcat. T.D. 40 ft.
Plains Prod. Co. No. 2 J. A. Knight, C NW SW sec. 22-24-37. Moving in.
Empire O. & R. Co. No. 1 S. Dabbs, C NW NW sec. 23-25-37. Rigging up.
Skelly Oil Co. No. 1-A Stuart, SW NE NE NW sec. 15-25-37. Moving in material.
Texas Co. No. 2 Sheppard "A," C SW NW sec. 6-26-37. Cellar and pits.
Maxwell, Crandall & Osmond No. 1 Lane-State, C SW NW sec. 32-10-34. Wildcat. Moving in rig.
J. E. Farrell No. 1 Walden "A," C SW NW sec. 15-22-37. Drlg. 90 ft.
J. E. Farrell No. 1 Walden "C," C SW SW sec. 15-22-37. Drlg. 250 ft.

Eddy County

Etz Bros. No. 3 State, sec. 16-17-30. Drlg. 2,690 ft.
Hammond et al No. 1 State, SW SE SW sec. 15-17-28. Drlg. 1,228 ft.
Pecos Valley Gas Co. No. 1 Andrews-State, C SW SW sec. 2-17-28. T.D. 1,673 ft.; to shoot.
Repollo Oil Co. No. 1 McIntyre "C," sec. 21-17-30. T.D. 3,218 ft.; acidized; flowed 70 bbls. of oil per day through tubing.
Republic Prod. Co. No. 6 Russell, SW NE NW sec. 18-17-31. T.D. 3,175 ft.; S.D. for repairs.
Flynn, Welch & Yates No. 74 State, C S½ NE SW sec. 27-18-28. T.D. 2,826 ft.; C.O.
D. & B. Oil Co. No. 2 Berry, NW SE NW sec. 21-17-30. Drlg. 3,282 ft.
William Dooley No. 1 Hatchett, NE SW NE sec. 11-20-26. Wildcat; drlg. 803 ft.

Harding County

Kahay No. 1 Dae Daca, C sec. 19-20n-31e. T.D. 1,702 ft.; S.D.
Clyde B. Neill No. 1 Foster, C NW SW sec. 27-21-30. S.D. 700 ft.

De Baca County

Mid-Continent Engineering Corp. No. 1 State, C NW SE sec. 27-4n-22e. T.D. 1,051 ft. in broken lime; S.D.

McKinley County

Claude Walker No. 2 fee, sec. 20-20n-9w. Drlg. at 100 ft.

Roosevelt County

Wirt Franklin and Flynn, Welch & Yates No. 1 Catts, C NW NW sec. 28-3n-30e. T.D. 1,030 ft.; set 12½-in. csg.

Union County

Superior Oil Corp. and Olson Drlg. Co. No. 1 J. H. Zurich, SE SW sec. 2-21-34e. Drlg. 2,545 ft.

NORTHWEST NEW MEXICO

Bernalillo County

Norine Realty Co., Inc., No. 2 Gallegas grant, SE NW NW sec. 19-11n-4e. Drlg. gr. sh. 2,300 ft.

Guadalupe County

Anton Chico Dev. Co. No. 2 fee, NW NE SW sec. 20-9n-17e. S.D. 804 ft. (cor.).

McKinley County

Al Gibbins No. 2 fee, NW SW NE sec. 28-20n-9w. Drlg sh. 425 ft.
Foster & Clark No. 2 fee, NW NE NE sec. 29-20n-9w. Drlg. 400 ft.
S. Bouton, SEL NW NE sec. 4-14n-10w. S.D. 1,490 ft.
Wm. Forth No. 5 fee, NW NW NE sec. 29-20n-9w. Loc. (first report).

San Juan County

Atchison & Galloway No. 1 Cassidy, C SE SE sec. 19-29n-11w. S.D. 788 ft.; S.O.&W. at 683-95 ft.
R. R. Burke No. 3 Govt., NW NW NE sec. 18-21n-13w. R.U. machine.
Kutz Canon O. & G. No. 1 Day, SW SW SW sec. 20-28n-10w. T.D. 4,400 ft.; fshg.
Angel Peak Oil Co. No. 7 Govt., Lot 2, sec. 11-28-11w. Drlg. 160 ft.
Jack Amenda No. 4 Hart, NW NE SW sec. 25-30n-12w. Drlg. 1,298 ft.

San Miguel County

Cabra Springs O. & G. Co. No. 1 Cabra Springs ranch, SW NE NE sec. 22-12n-22e. Drlg. 4,110 ft. in anhyd.
S. W. Pressey et al No. 1 Faulkner, NE NE NE sec. 25-17n-16e. Resuming at 5,082 ft.; (formerly Star-Kennedy No. 3 Adams).

Torrance County

48 Pet. Co. No. 1 Greenfield, C NW SW sec. 17-9n-8e. Resumed at 2,045 ft.

COLORADO

Adams County

Oklahoma Oil Co. No. 1 Baxter, C SW sec. 2-3s-66. S.D. 4,368 ft. for 4-in. D.P.
Glenridge Oil Corp. No. 1 Hills, SE SE SE sec. 27-3s-64w. T.D. 4,267 ft.; rebldg. rig and W.O. 6¼-in.

Archuleta County

The William E. Hughes Estate is drilling its No. 13 well in the Gramps (Price) district at an unreported location, but probably north of the group of producers in section 24-33n-2e.

Lafayette M. Hughes, manager of the estate, says that No. 13 Gramps will be completed, after which operations will be shut down for the winter. The wells which have been drilled to completion are being equipped for pumping and will be given production tests before operations cease. The estate is erecting a 20,000-bbl. storage tank preliminary to making these tests. In the spring the estate will go ahead with its plans and will build a 14.6-mile 4-inch pipe line from the field to Chama, N. Mex. The estate is taking bids now for this line, but will not begin construction until spring.

Sharp and others No. 1 E. R. Walcott, C S half SE section 34-33n-2e, Price district, 2 miles southwest of No. 1-A Garnett, the discovery well, began spudding October 4 to go 2,000 feet. The Walcott farm consists of 320 acres, of which the government retains the royalty on 160 acres. The test is on the fee land. The Oil City Petroleum Co. has the permit on the remaining 160 acres.

William E. Hughes Est. No. 11 Gramps, NE of No. 10. Drlg. unreported depth.
Carl D. Linstrom No. 1 Crowley, SE SE SE sec. 3-22n-2e. Stdg. partly rigged.
Maryott Drlg. Co. No. 1 Hollywood, SE SE SE sec. 15-34n-1w. S.D. 625 ft.
Oil City Pet. Co. No. 1-A Garrett, NW NE NW sec. 25-33n-2e. S.D. after P.B. from 1,515 ft. to O.S. at 970 ft.
Oil City Pet Co. and Archuleta O. & G. Co. No. 1 Reeder, Lot 50 (SW SE SW) sec. 24-33n-2e. S.D. 1,183 ft.
H. L. Kendrick No. 1 Crowley (unsurveyed), sec. 2-32-1. S.D. 1,167 ft.

Baca County

Paul R. Robb Pet. Corp. No. 1 Lovette, NW NW NW sec. 24-32s-48. T.D. 2,790 ft.; drlg. on junk.

Boulder County

Baker and others No. 1 fee, SW NE NE section 9-1n-70, in the old Boulder field, was completed in sandy shale of the Hygiene section at 1,620 feet for 3 bbls. a day.

Boulder Prod. Dev. Co. No. 2 Maxwell, NW NW NE sec. 24-1n-71. Drlg. 2,096 ft.

Huerfano County

S. W. Pressey No. 1 Ojo, SW NE sec. 10-29s-69. O.W.D.D.; drlg. 3,150 ft.; S.G.; object Dakota at 3,900 ft

Jackson County

Colorado Oil Ref. Co. No. 1 North Park Coal Co., NW NW sec. 18-9n-78w. Landed 8¼-in. at 2,700 ft.

LaPlata County

Detroit Oil Association No. 1, NW SW sec. 9-35n-12w. Drlg. below 3,125 ft.
McGarr Pet. Co. No. 1 Pinon Mesa Land Co., CSL NE NE sec. 34-33n-12w. Cmtd. 6¾-in. at 3,450 ft.; D.D. to 3,680 ft.; S.D.

Larimer County

Continental Oil Co. No. 8 Buckeye-U. P., C NE SW sec. 1-10s-68. Drlg. 4,727 ft. in sh. and bentonite.

Las Animas County

Garcia Corp. No. 1 McClung; NE NW SE sec. 19-33s-61. M.I.M.

Lincoln County

Consolidated Smelting & Metals Co. No. 1 Hancock, NE NE SW sec. 7-17s-62. S.D. 2,096 ft.

Moffat County

Continental Oil Co. No. 1 Henderson, SW SW SW sec. 16-3s-91. Cg. 2,639 ft.; no recovery, but cuttings show pink sd.
Mountain Fuel Supply Co. No. 1 Allen, NE SW SE sec. 32-12n-97w. Cg. 4,250 ft.
Mountain Fuel Supply Co. No. 1 Kuykendall, NE NE SE sec. 22-12n-100. Drlg. 2,647 ft.
Morapas Pet. Co. No. 1 Cole, C SW SE sec. 1-3n-92. Rig up; bldg. winter camp.

Morgan County

Swisher et al No. 1 Lunt, 92 ft. W of E line and 360 ft. N of S line, sec. 3-4n-60. T.D. 1,718 ft.; testing.

Montezuma County

McElmo Oil Co. No. 1 West, NE NW NE sec. 21-26n-17w. S.D. 3,960 ft.

Park County

South Park Oil Co. No. 1 Lemar, NE NE SE sec. 34-11s-75. Drlg. 1,450 ft.
South Park Oil Co. No. 1 LeBert, NE NE NW sec. 21-11n-75w. S.D. 705 ft.

USED SUCCESSFULLY IN THE RODESSA FIELD—See Page 26

GOTT WATER COOLER
Made in 3, 5, 8, 10, and 20 gallon sizes.

Gotkool

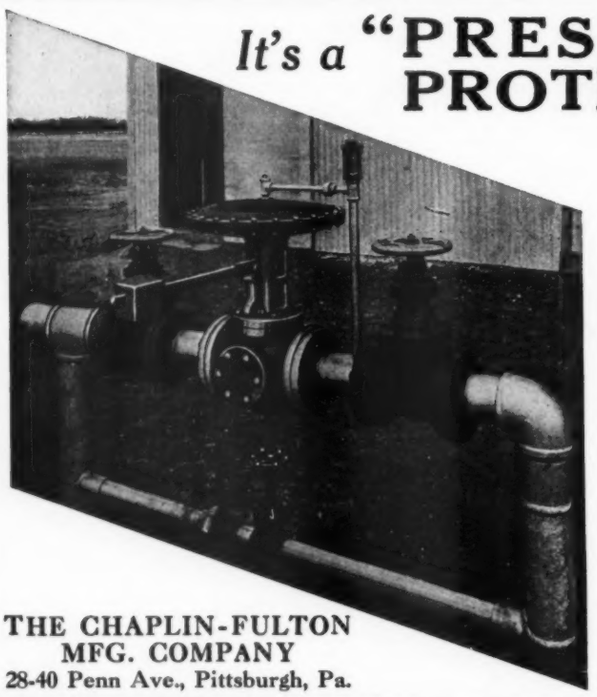
WATER CANS & COOLERS

GOTT WATER CAN
Made in 1½, 3, 5, and 10 gallon sizes.

GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . . . .

H. P. GOTT MFG. CO.
WINFIELD, KANSAS

KEEP PURE DRINKING WATER ALWAYS HANDY



It's a "PRESSURE-PROTECTOR"

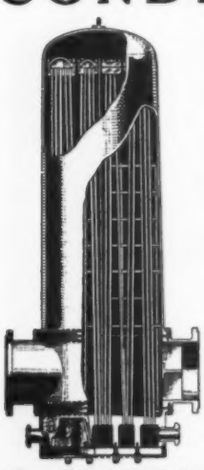
CF

All you do is determine the desired pressure of your gas line, and set the weight on the lever of a Chaplin-Fulton Regulator at the proper position. Low or high, that exact pressure will be maintained. Nothing short of an earthquake can change it.

There are many types of Chaplin-Fulton Regulators, including the *Low Pressure Regulator* with automatic cut-off, as shown. They have covered all requirements of pressure control for over 50 years.

THE CHAPLIN-FULTON MFG. COMPANY
28-40 Penn Ave., Pittsburgh, Pa.

LEACH
FRACTO CONDENSERS



For High Pressure and Temperature

•

Also Heat Exchangers for Vacuum and Atmospheric Service

Fracto Control

Patented in the United States and Foreign Countries

C. H. LEACH CO., INC.
117 Liberty Street New York, N. Y.

SINCE 1880 THE VERY BEST IN LEATHER SPECIALTIES

•

SEEP LEATHER CUPS

•

C. L. & W. W. AUER
Corry, Pennsylvania

South Park Oil Co. No. 1 State, SE NE SW sec. 16-11s-75w. Drlg. 5,090 ft.; 4¾-in. at 5,060 ft.

Routt County

Mid-Colo Pet. Co. No. 1 Omoholt, NE SE SE sec. 29-4n-87w. S.D. 2,910 ft.; renewing leases before drlg. into Sundance.

Washington County

I.T.I.O.-Carter-Foster Minerals Corp. No. 1 Vorce, C NE NE sec. 28-1s-49. Drlg. 6,425 ft.

Weld County

Continental Oil Co. No. 2 Briggs, C NE SW sec. 13-6n-61. T.D. 6,663 ft.; top Muddy 6,661 ft.; S.O.&G. on pits; prep. to run pipe.

WYOMING

Albany County

The Ohio Oil Co. No. 1 Stiles, SW cor. section 12-15n-75, Laramie district, was abandoned at 3,003 feet, total depth. It had water in the Tensleep at 2,978-3,003 feet and plugged back to test a show of oil in the Satanka sand in the red beds at 2,840 feet. The test showed water.

The California Co. is starting a new wildcat in its No. 1 Vallie G. Bath, NW NW SW section 4-16n-75, on the Little Laramie structure, southwest of Laramie and southeast of its Quealy operation. The nearest test to this location was drilled by the Union Oil Co. of California in section 33-17-35, which had water in the Muddy at 2,028-57 feet and in the Dakota and Lakota sands at 2,170 feet and 2,270 feet. It was abandoned in the top of the Morrison at 2,277 feet. Manning & Martin, Inc., have the contract for the new test.

California Co. No. 4 Holst, SE sec. 13-17n-77. Drlg. 2,531 ft.
Geo. D. Parkinson et al No. 1 George & Hunt, NW NE SE sec. 5-17-75w. T.D. 5,022 ft.; top red beds 5,007 ft.; S.O. and G. at 4,968 ft.; rng. Schlumberger tester.
Hal Blakeman No. 1 Chapple, C NE NW sec. 31-21-76. Drlg. 1,532 ft.
California Co. No. 1 Bath, NW NW SW sec. 4-16n-75. Cellar and pits (first report).

Big Horn County

Stock Oil Co. No. 1 Allen, Lot 52, sec. 32-56n-97. T.D. 3,825 ft.; on fire again; laying steam lines.
Ohio Oil Co. No. 1 Wiley, C NE NW sec. 25-56n-97. T.D. 399 ft.; cmtg. 12½-in.
Ohio Oil Co. No. 2 Smith, CWL NE SE sec. 32-56-97. Drlg. 3,838 ft.
Ohio Oil Co. No. 1 Irene Lindsay, C NW SE sec. 23-56n-97. T.D. 5,094 ft.; top Embar 5,005 ft.; cmtd. 7-in. at 5,080 ft.; 750 sacks; W.O.C.
Ohio Oil Co. No. 2 State, NE cor. Lot 38, sec. 36-46n-97. R.U.
Taylor Oil Co. No. 1 Robinson, SW SW NW sec. 24-56n-97. Drlg. 319 ft.; 12½-in. at 135 ft.
Peay Oil Co. No. 1 Denio Hr., 43-C, sec. 15-55n-87w. T.D. 3,845 ft.; prep. to run 6⅝-in.
Stock Oil Co. No. 1 Griffin, Lot 60, sec. 4-55n-97. Drlg. 2,160 ft. in sh. and streaks of sd.
Peter Evanoff et al No. 1 McAllister, NW NE SE sec. 9-55n-87. T.D. 2,895 ft.; fsg. bit; 6¼-in. at 2,640 ft.

Carbon County

Medicine Bow Oil Co. No. 1 Hintze-Govt., C NE SE sec. 18-22n-78. Drlg. 1,590 ft.
General Pet. Corp. No. 1 Union Pacific, SW NW sec. 19-83w. Drlg. 4,456 ft.
Ohio Oil Co. No. 1 Hatfield, NE SE NW sec. 2-19n-88. Drlg. 4,067 ft. in red beds. O.W.D.D. from 2,492 ft. (first report).
Ohio Oil Co. No. 11 Harrison & Cooper, NE SW SW sec. 35-20n-78. Drlg. 2,300 ft. in blk. sh.
Sinclair-Wyoming Oil Co. No. 10 Govt., SW SE NW sec. 7-26-89w. Drlg. 4,750 ft. in red beds.

Converse County

Chadron-Osage Oil Co. No. 1 State, SW SW sec. 16-32n-69w. S.D. 3,050 ft.; may install rotary.
Wyoming Southern Oil Co. No. 1 Salisbury, NW NW SE sec. 27-32n-69. Drlg. 210 ft.

Campbell County

G. J. Shearin et al No. 1 Rhodes, NE SE SW sec. 24-49n-74. S.D. 191 ft.

Fremont County

C. E. Nelson No. 2 Enos, SW NE SW sec. 27-3n-1w. Drlg. 326 ft.
Tropic Oil Co. No. 1 Govt., C SE SW sec. 34-27n-90w. Drlg. 2,853 ft. in Frontier; carrying 4½-in.
Sinclair-Wyoming Oil Co. No. 2-C Muskrat, NE SW SW sec. 1-33n-92w. Drlg. 7,100 ft. in r.b.

Goshen County

The Ohio Oil Co. has released location for its test in the Jay Elm (Rawhide Butte) district in its No. 1 Joseph A. Waggoner, C NE NE section 14-28n-63. A 122-foot steel derrick is up and it is rigging up rotary tools. The test starts in the Tertiary and will go through the Cretaceous and possibly to the Sundance. Location is based on an extensive seismograph survey.

Ohio Oil Co. No. 1 Waggoner, C NE NE sec. 14-28n-63w. R.U. (first report).

Hot Springs County

Mountain States Power Co. No. 1 Mexico-Wyo., SW SW NW sec. 11-46n-99. T.D. 2,901 ft.; C.O.
Empire State Oil Co. No. 1 Larson, sec. 33-44n-93. Drlg. 1,590 ft.
Fruedenthal No. 6, SE SE NE sec. 21-43-92. T.D. 405 ft.; tstd. 4 B.P.D.; will D.D.

Laramie County

Amerada Pet. Corp. No. 1 Morton, C SW SW sec. 13-13n-68. Drlg. 5,030 ft. in sh.

Lincoln County

Place Oil Co. No. 36, SE sec. 9-26n-113. Spd. and set one joint 15½-in. and S.D.; W.O. approval of bond.

Senrab Oil Corp. No. 3 Govt., CSL SE NW sec. 10-26n-113w. S.D. 1,020 ft.

Niobrara County

Three completions and two new locations were made in the Lance Creek Field.

The Continental Oil Co. No. 1 Emil Rohlff, CSL SE NW section 32-36n-65, a flank well on the northwestern side of the pool, and apparently close to the edge, swabbed 56 bbls. the first 24 hours through the tubing with 50,000 feet of gas. Elevation is 4,365 feet. Total depth is 3,967 feet and 7-inch was cemented at 3,859 feet. Top of the red beds was at 3,961 feet.

The Ohio Oil Co. No. 1 Lamb, C NE NE section 5-35n-65, an old well drilled deeper from 3,485 feet, was completed in the basal Sundance at a total depth of 4,010 feet and flowed 2,956 bbls. and 3,000,000 feet of gas the first 24 hours through the 4¾-inch casing. Elevation is 4,418 feet and the sands were at 3,375-3,804 feet and 3,839-55 feet.

The new locations are the Ohio Oil Co. No. 4 Agnes Rohlff and same company's No. 6 Carrie Putnam.

The Ohio Oil Co. No. 3 Richards & Comstock, CNL NE SW section 32-36-65, made 311 bbls. of oil and 2,500,000 feet of gas first 24 hours at a total depth of 3,867 feet. Top of red beds was at 3,862 feet. Elevation is 4,355 feet.

Argo Oil Co. No. 5 Elliott, C NW NW sec' 5-35n-65. Drlg. 2,394 ft.; cmtd. 12½-in. at 323 ft.
Bay-Elwell No. 1 Joss, CSL SE NW sec. 1-34n-66w. M.I.M. (first report).
Continental Oil Co. No. 2-B Schuricht, SE SW SE sec. 6-35n-65. Drlg. 714 ft.; cmtd. 13⅜-in. at 361 ft., 225 sacks.
Continental Oil Co. No. 2-A Dielman, NW NE NE sec. 7-35n-65. Dk.; W.O.R. equip.
Adams Louisiana Co.-Bay Elwell No. 1 Spaugh, C NW NE sec. 18-35n-65. Drlg. 2,115 ft.
Holly Dev. Co. No. 1 Novick, NE SE SW sec. 6-35n-65. Drlg. 2,230 ft.
Lewis Gokel No. 1, NE SE NW sec. 31-35n-62w. Drlg. 945 ft.
J. M. Huber Corp. No. 2 Joss, NE NE SW sec. 6-35n-65. M.I. rot.
Ohio Oil Co. No. 6 Putnam, C NW NW sec. 4-35n-65w. Bldg. rig (first report).
Ohio Oil Co. No. 4 Rohlff, C SW NE sec. 32-36n-65w. M.I. rot. (first report).
Ohio Oil Co. No. 5 Converse Sheep, C SE SW sec. 32-36n-65w. S.D. below 4,600 ft.; believed to have cored top of Tensleep.
Riggs Oil Co. No. 2 Spaugh, C NW NE sec. 5-35n-65. T.D. 350 ft.; fsg.
Chester Oil Co. No. 1 fee, NE NE NE sec. 14-39n-61. Drlg. 926 ft.; 45 B.P.D. in Dakota at 778-808 ft.
S. & H. Dev. Co. No. 11-A Olinger, SW NE sec. 1-36n-63. T.D. 1,750 ft.; D.&A.

Park County

General Pet. Corp. No. 1 Govt., NW NW NW sec. 33-47-100. Spdg. 400 ft.; prep. to set 15½-in.
Resolute Oil Co. No. 1 State, C NW SW sec. 16-57-101w. Drlg. 7,865 ft.

Platte County

Dividend Oil & Ref., Inc., No. 1, CSL NW SW sec. 17-24n-66. Rng. 12½-in. at 511 ft. (first report).

Sublet County

Progressive Oil Co. No. 1 Haddenham, SE NW NW sec. 21-28n-113w. Drlg. 480 ft.; 4¾-in. at 210 ft.

Sheridan County

Beaver Creek Oil Co. No. 1 Allison, SW SE sec. 15-55-85. T.D. 3,185 ft.; U.R. 4¾-in. to carry; H.F.W. at 3,090-3,100 ft.

Sweetwater County

Mountain Fuel Supply Co. No. 1 Cooper, C NW SE sec. 15-16n-104. Loc.; South Baxter Basin (first report).

Uinta County

Bridger Basin Oil Co. No. 1-B, NW NW SW sec. 10-14n-118. Drlg. 1,800 ft.
W. D. Marshall No. 1 Govt., NW SW SE sec. 12-15n-118. Drlg. 1,388 ft.

Washakie County

Wyoming O. & R. Co. No. 4 Govt., NW NW NW sec. 31-48-90. Drlg. 236 ft.
Nystrom & Smoot No. 3 State, NE NE NE sec. 36-48-91. Drlg. 186 ft.
Yale Oil Corp. No. 1 Govt., SE SE SE sec. 25-48-91. Drlg. 260 ft.
Arlton & Doyle No. 1 Govt., SW SW SE sec. 29-48-91. Drlg. 1,132 ft.
Bruce Teeters No. 3 Govt., CWL SW SW sec. 30-48-90. Drlg. 1,576 ft.
Wyoming O. & R. Co. No. 1 State, NE SE NE sec. 36-48-91. Drlg. 1,510 ft.
Woods-Callahan Oil Co., Ltd., No. 1 Keye, SE SE NW sec. 25-48n-91. Loc. (first report).

Weston County

Charles Stough No. 4, CWL SW NW sec. 4-46n-63. Drlg. 300 ft. (first report).
H. D. Wiltse No. 10, NE NW NE sec. 17-46-63. R.O.G. (first report).
John Brophy No. 1 Lemke, SE SE NE sec. 10-48n-65w. Drlg. 637 ft.
Conway Oil Corp. No. 1 Govt., C SE NW sec. 7-41n-60w. Cmtd. cave at 2,700 ft.; W.O.C.

MONTANA

Big Horn County

Daniels Pet. Co. No. 1 May, C SE SE sec. 13-1s-33e. S.D., 3,540 ft.
E. A. Lammers & Son No. 1 Berhold, SE SE sec. 6-1s-32e. Drlg. 236 ft.

Cascade County

C. Leonard Smith No. 1 Smith-Schwingle, NE NE SW sec. 14-22n-2e. Cmtd. 8¾-in. at 210 ft.

Carbon County

East Bridger O. & G. Co. No. 1, CSL SE SE sec. 23-6s-23e. Drlg. 689 ft.
Ohio Oil Co. No. 1 Northern Pacific, SE NE SW sec. 11-7s-21. T.D. 5,554 ft.; cmtd. 4½-in. at 5,440 ft.; W.O.C.; M.O. rot.; stdg.
Henderson Producing Co No. 1-H-11 Elk, 11, SE SE NW sec. 35-9s-23e. Drlg. 214 ft.; base Eagle 90 ft.
Round Butte O. & G. Co. No. 2, CWL NE SE sec. 3-8s-23e. Drlg. 336 ft.

Fallon County

The Montana-Dakota Utilities Co. No. 1 Unit, NE NE NW section 17-4n-62, the discovery well in deeper horizons on the Baker-Glendive anticline, the deepest well in Montana, is reported to have made 10 to 20 bbls. an hour on a swabbing test after acidizing with 2,000 gallons. The horizon has not been definitely identified, but if it is the Devonian as some reports state, it is the first well in Montana to produce from that formation. Total depth is 8,186 feet. The 4½-inch was cemented at 8,124 (correct) feet. The well is located only 3 miles west of the South Dakota boundary. It first attracted attention last May when it showed for a producer in the Madison (?) at 6,797 feet, but was drilled deeper when water interfered with a satisfactory test.

Montana-Dakota Utilities Co. No. 1 Unit, NE NE NW sec. 17-4n-62. T.D. 6,186 ft.; tstg.
Montana-Dakota Utilities Co. No. 2 Unit 8, C NE SW sec. 8-4n-62. R.U.; W.O. tools.

Fergus County

Minnesota Co. No. 1 Fenholt, SE NW SW sec. 24-21n-18e, S.D. 1,100 ft.; tools still in hole.
Judith Operating Co. No. 2 Govt., NW NE sec. 5-22n-17e. Drlg. 3,010 ft.
Kalispel-Kevin Oil Co. No. 2 Emmons, C SW SE sec. 20-2s-18e. Drlg. 576 ft.
Emmons et al No. 3, SE NE NE sec. 6-21n-18e. Drlg. 716 ft.

Glacier County

An important extension of the Cut Bank field 3 miles to the southwest took place this week in the completion of H. R. Patterson No. 1 Chatterton, SE SE NE section 22-32n-6w. It was drilled to a total depth of 3,324 feet and swabbed 98 bbls. the first 24 hours. It was then shot with 50 quarts at 3,307-18 feet, but has not been tested since shooting. It cut the Sunburst sand, which showed a small quantity of water, at 3,220-48 feet. The top of the Cut Bank horizon was at 3,283 feet. First show of oil was at 3,290 feet and the pay at 3,505-15 feet. Top of the Ellis was at 3,318 feet and elevation is 3,776 feet. The well is in the Blackfeet Indian Reservation and 3 miles to the southwest of the producers in the big bend district which was opened to development last fall at a sale of Indian leases. It is probable that the bringing in of this producer will result in another sale of Indian leases at an early date.

There were two completions in the Cut Bank pool. The Texas Co. No. 3 Tribal-122, C Lot 2, section 6-32n-5w, swabbed 208 bbls. the first 24 hours and pumped 90 bbls. the first 24 hours at a total depth of 2,933 feet. The Sunburst was at 2,866-73 feet, with a small show of oil at 2,870-73 feet. The top of the Cut Bank was at 2,903 feet and the Ellis at 2,929 feet. The pay was at 2,921-29 feet. Elevation is 3,692 feet.

R. C. Tarrant No. 8 Haglund, Jr., CEL NE NW section 13-34n-6w, in the old part of the field, will be a small well. At a total depth of 2,845 feet, oil rose 300 feet. It would not swab on account of the low fluid level. The Sunburst at 2,780-96 feet was dry. The top of the Cut Bank was at 2,800 feet and the Ellis at 2,815 feet. The pay was at 2,805-15 feet. Elevation is 3,799 feet.

There were no new locations.

A. B. Cobb No. 2 All.-115, SE NE SE sec. 31-33n-5w. Bldg. road; (first report).
A. B. Cobb No. 2 Jackson-Reagan, NE NE NW sec. 5-32n-5w. Cmtd. 7-in. at 2,812 ft.; W.O.C.
Drumheller Reservation Synd. No. 1 Tarrant, C SW SW sec. 21-34n-6w. Spdg. 250 ft.
Montana Power Gas Co. No. 2 Gaines, CSL SW NW sec. 6-33n-5w. Drlg. 2,755 ft.
Montana Power Gas Co. No. 1 Hattie Miller, C NW sec. 1-35n-5w. Drlg. 2,645 ft.
Nadeau Bros. No. 2 Ewald, C SE NW sec. 9-32n-5w. Drlg. 450 ft.
Santa Rita O. & G. Co. No. 1 Shubat, C NW sec. 33-34n-5w. Drlg. 2,655 ft.; 2,000,000 ft. of gas at 2,650-53 ft.
R. C. Tarrant No. 3 State, NE SE NE sec. 36-34n-6w. Drlg. 2,205 ft.
R. C. Tarrant No. 7 Getty, SW NW SW sec. 2-34n-6w. Colo. 515 ft.; cmtd. 10¾-in. at 550 ft.
R. C. Tarrant No. 3 Reichoff, C NE NE sec. 36-32-6w. Drlg. 1,225 ft.
Vern Johnson No. 1 Tribal-118, C SW SW sec. 1-32n-6w. T.D. 2,900 ft.; fsg. baller.
Texas Co. No. 5 Tribal-122, CNL SW SW sec. 5-32n-5w. Drlg. 510 ft. (loc. cor.).
Texas Co. No. 2 Tribal-121, C NE SE sec. 36-33n-6w. Drlg. 2,195 ft.
Texas Co. No. 4 Tribal-122, C SE SE sec. 6-32n-5w. T.D. 2,927 ft.; cmtd. 7-in. at 2,920 ft.

(Continued on Page 171)

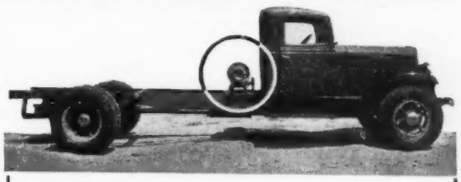
RYERSON STEEL

IMMEDIATE STOCK SHIPMENT

Bars, structurals, rails, sheets, plates, special alloy and tool steels, stainless steel (Allegheny metal) sheets, bars, etc., shafting, welding rod, babbitt, boiler tubes and fittings, wire, reinforcing bars, pipe, copper, brass, turnbuckles, metal working tools, etc.

Write for the Ryerson Stock List.

JOSEPH T. RYERSON & SON, INC. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Cleveland, Detroit, Buffalo, Boston, Philadelphia, Jersey City. Offices at: Tulsa, Kansas City, Minneapolis.



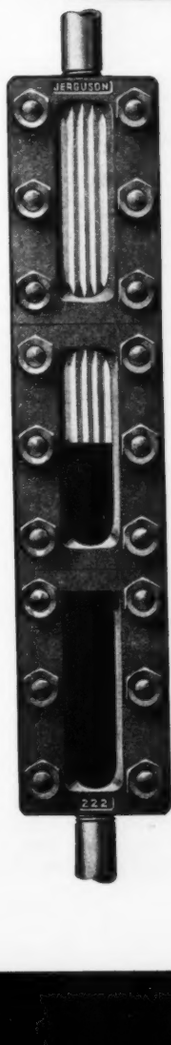
Hutchins ALL STEEL Reversible Self Locking Winches for heavy oil field work

90% of the truck winches on the Pacific Coast are Hutchins Winches

Write for literature and prices

HUTCHINS WINCH CO.
631 East Florence Blvd.
Los Angeles TW2375 California

JERGUSON



REFLEX GAGES

are ideal for gasoline, kerosene, steam, oil. No matter what the color of the liquid, they show the level in BLACK.

The *empty* space appears WHITE

The *Liquid* shows BLACK

Safe and durable at highest pressures and temperatures. Furnished with or without valves for every type of service. Write us.

JERGUSON GAGE & VALVE CO.
Mystic Ave. & Northern Artery
SOMERVILLE, MASS.

Oklahoma Operations

By DAL DALRYMPLE

EXTENSION IN EDMOND POOL; CAPITOL POTENTIAL DECLINES

Extension of the Edmond pool of Oklahoma County was indicated at the week end, climaxing a week which was featured by completion of more big wells in the Crescent pool and of several producing wells in the Fitts, Oklahoma City, South Burbank, Olympic and other proven areas. Oklahoma wildcats had little to offer in the way of interesting news during the week.

Blackstock Oil Co. No. 1 Tegtmeyer, NE NE SE section 36-14-4w, will extend the Edmond pool one-quarter mile westward if it is completed as a commercial producer as seems likely. It flowed an estimated 1,700 bbls. of oil gross in about 12 hours, but operators were killing the flow to drill deeper into Wilcox sand. It was bottomed at 6,680 feet near the base of Simpson Dolomite, which was acidized. Gas was estimated at 8,000,000 feet.

Crescent wells continue to show for big production. Continental Oil Co. No. 4 McConnell, NE SW SE section 28-17-4w, flowed 1,838 bbls. of oil in four hours and was shut in at 6,295 feet, total depth, in sand. Texas Co. No. 4 Denny, NW NE SE section 33-17-4w, was rigging up to deepen after making potential of 13,504 bbls. at 6,274 feet, total depth. The No. 4 McConnell extended the prolific producing area at Crescent one location west.

Potential production of all wells in the Capitol extension area of the Oklahoma City field declined more than 29 per cent from September 1 to October 1. Total potential September 1 was 1,528,939 bbls., and on October 1 the total was 1,072,349 bbls., a drop of 456,590 bbls. daily. In contrast to this sharp decline was the showing last week at the British American Oil Producing Co. No. 2 Hampton, near Northeast Thirtieth Street and North Kelly Avenue. Total depth is 6,491 feet. It has been producing for about four months. At the week end it made new potential of 9,057 bbls., with 10,800,000 feet of gas. Its initial potential was 7,412 bbls., and the October 1 potential was 2,374 bbls. It was shot with nitro prior to the last test.

Indian Territory Illuminating Oil Co. and others No. 1 Hatler, SW SW NE section 32-2s-17w, south of Frederick, is a new wildcat in Tillman County. Work was due to start by November 1.

Caloma Oil Co. of California has spudded in for a test on the company's block of acreage recently assembled 2½ miles southwest of the Fitts field. It is No. 1 W. H. Brents, SE NE SW section 4-1n-6e, Pontotoc County. Nels Burton Drilling Co., Oklahoma City, has the contract and is prepared for a 4,800-foot test if necessary. Interest in recent months has centered in the east extension of the Fitts field, so this well will be closely watched to see what happens in the other direction.

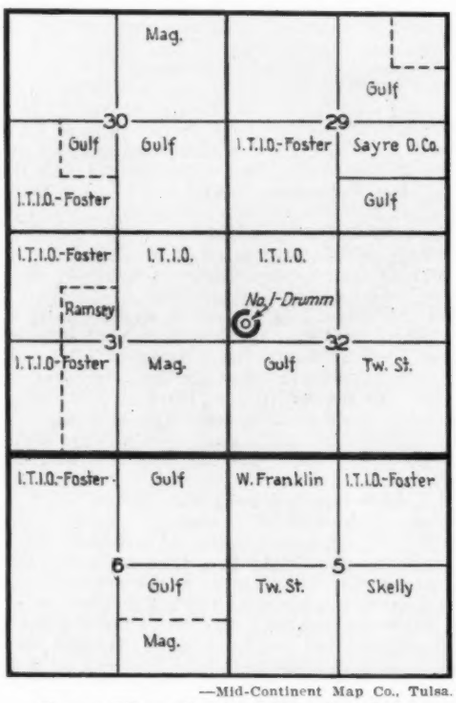
Completions of the week included 25 oil wells, 4 gas wells and 21 dry holes.

Pontotoc County

Completions in the Fitts field, Pontotoc County, included five producing wells, a temporary abandonment and one old well plugged back. E. H. Moore and others No. 12-A Shauer, SE SE NW section 29-2-7, topped Bromide at 4,155 feet; total depth, 4,355 feet; flowed 366 bbls. of oil in one hour through Hydril and made potential of 2,240 bbls. Same operators' No. 4-A Moody, NW SE SE section 22-2-7, flowed 178 bbls. in one hour before acidizing and 589 bbls. through tubing in six hours after acidizing. Production was from Hunton lime topped at 3,510 feet; Sylvan, 3,907 feet; total depth, 3,909 feet.

Carter Oil Co. No. 19 Richards, SW SW SE section 30-2-7, made potential of 3,623 bbls. from Wilcox sand at 4,415-36 feet, total depth. Top of McLish was 4,075 feet; Dense, 4,315 feet. Fleetborn & Simpson No. 6-A Woolley, NW NW SW section 27-2-7, topped Hunton at 3,218 feet; Sylvan, 3,520 feet; total depth, 3,525 feet; was acidized and flowed 485 bbls. through tubing in four hours. Magnolia Petroleum Co. No. 21 Metropolitan, SW SE SE section 22-2-7, was bottomed at 3,829 feet and after acidizing with 5,000 gallons flowed 362 bbls. of oil in one hour through casing. Top of Hunton lime was 3,446 feet; Sylvan, 3,825 feet. Same operator's No. 3 Smith, NE SE NW section 28-2-7, an old well, was plugged back from 4,288 feet to 4,263 feet, casing was ripped and it flowed 180 bbls. of oil in six hours through tubing, recompleted. Blackstock and others No. 1-A Craddock, NE NE SE section 25-2-6, was temporarily abandoned at 3,087 feet, total depth.

New work in Pontotoc County: Caloma Oil Corp. No. 1 Brentz, SE NE SW section 4-1n-6e, wildcat, was rigging up rotary; Harry Blackstock No. 1-A Kirby, SW NE SE section 22-2-7, rig on



—Mid-Continent Map Co., Tulsa.

Map of Tillman County district where Indian Territory Illuminating Oil Co. and Foster Minerals Corp. have staked location for No. 1 Drumm, SW SW NW section 32-2s-17w. The wildcat is south of Frederick

ground; Heenan & Coe No. 1 L. B. Woolley, SW NW SW section 22-2-7, location; Carter Oil Co. No. 9 G. Smith, NW NW SW section 28-2-7, digging cellar; same operator's No. 12 A. J. Harden, SE SE SW section 30-2-7, location; Loual Drilling Co. and W. A. Delaney No. 2-A D. Harden, SE SW NW section 30-2-7, cellar.

Continental Oil Co. No. 3 House, NW NE SE section 12-1n-7e, had Wilcox sand at 4,714-19 feet, total depth, and flowed 262 bbls. of oil in 12 hours, partly while drilling. Harry Blackstock and others No. 3 Daniels, NE SE SW section 21-2-7, flowed 254 bbls. of oil in one hour and was shut in for potential test; total depth, 4,282 feet. Magnolia Petroleum Co. No. 5 M. Norris, SW SW SE section 21-2n-7, total depth 4,325 feet, flowed 576 bbls. of oil gross in one hour after acid treatment. Same operator's No. 20 Metropolitan, SW SW SE section 22-2-7, total depth, 3,840 feet; acidized with 5,000 gallons and was waiting on results.

Estimated Daily Production

Estimated daily average production of Oklahoma for the week ending October 10 and for the preceding week is as follows:

	Barrels	
	Oct. 10	Oct. 3
Allen	7,200	8,250
Burbank	7,700	7,700
South Burbank	15,250	14,500
Balance Osage	22,000	22,000
Blackwell district	5,350	5,375
Bristow-Slick	8,150	8,450
Chandler	3,800	3,875
Crescent	8,725	7,200
Cromwell	3,575	3,550
Cushing-Shamrock	10,750	11,350
Duncan district	4,075	4,050
Edmond	17,200	11,825
Fish	7,175	7,175
Fitts	56,800	58,500
Gray	1,500	1,500
Graham	4,700	4,725
Healdton	9,500	9,475
Hewitt	4,475	4,475
Holdenville	975	1,025
Keokuk	6,200	6,600
Konawa	1,775	1,700
Lucien	12,500	12,250
Marshall-Lovell	600	650
Oklahoma City	148,300	131,950
Olympic	7,450	7,450
Papoose	975	975
Polo	2,650	2,625
Sasakwa and townsite	2,700	2,850
Sholem-Alechem	3,300	3,425
Seminole field:		
Bowlegs	11,200	11,275
Carr City	4,675	5,850
Earlsboro	6,550	6,275
South Earlsboro	850	875
East Earlsboro	9,550	9,575
Little River	11,450	12,150
East Little River	1,175	1,075
Maud	875	875
Mission	2,375	2,100
Seminole	9,575	9,975
East Seminole	4,550	4,850
Searight	4,775	4,900
Total Seminole	67,600	69,775
St. Louis-Pearson	24,325	23,375
Tatums	3,375	3,175
Tonkawa-Garber-Thomas	5,550	5,550
Wewoka	3,950	3,900
Yale-Jennings	4,075	4,100
Other pools	69,450	72,275
Total Oklahoma	563,675	547,525

Oklahoma County

Three new producing wells were completed in the Capitol area of the Oklahoma City field, an old Capitol well was deepened and recompleted and another Oklahoma County completion was in the Edmond area. The latter was the Continental Oil Co. No. 11 Young, NE SW NW section 31-14-3w, which flowed 2,373 bbls. of oil in four hours, making potential of 14,239 bbls. Top of first Wilcox sand was 6,555 feet; second sand, the producing horizon, 6,640 feet, total depth, 6,698 feet.

Largest completion in the Capitol zone was Inland Development Co. No. 1 Harn, SE SE NW section 27-12-3w. It topped Wilcox sand at 6,410 feet; total depth, 6,439 feet; flowed 2,078 bbls. in 4 hours and 12 minutes and made potential of 12,049 bbls. on basis of the last three hours' flow. Knox Garvin No. 1 Mason, SE cor. section 27-12-3w, flowed 476 bbls. of oil in three hours and made potential of 3,830 bbls. Wilcox sand was topped at 6,306 feet; total depth, 6,433 feet. Phillips Petroleum Co. No. 1 Howe, SW SE SE section 27-12-3w, Block 24, Howe's Capitol Addition, topped Wilcox sand at 6,335 feet; total depth, 6,507 feet; flowed 302 bbls. in two hours and made potential of 3,625 bbls. British American Oil Producing Co. No. 1-A Warr, SE NW SE section 22-12-3w, an

old well, was deepened from 6,405 feet to 6,511 feet and flowed 1,343 bbls. of oil in seven and one-half hours, recompleted.

No new work was reported in Oklahoma County.

British American Oil Producing Co. No. 1 McNabb Park, SE SE NE section 22-12-3w, topped second Wilcox sand at 6,400 feet; total depth, 6,489 feet, flowed 100 bbls. of oil an hour through drill pipe and was taking potential. Travis Petroleum Co. No. 1 Fair Park, SW SW NW section 36-12-3w, total depth, 6,431 feet, flowed 2,684 bbls. of oil in 24 hours, but was not completed.

Seminole County

Completions in Seminole County were as follows: Carter Oil Co. No. 1 Holly, C E half SW NW section 23-10-6; Misener sand, 4,285 feet; total depth, 4,294 feet; swabbed and flowed 626 bbls. of oil, with an estimated 10 per cent water. Deep Rock Oil Corp. and others No. 2 Lozier, SW SW NW section 20-9-7, Cromwell sand, 3,492 feet; total depth, 3,519½ feet; flowed 566 bbls. of oil in 48 hours, with 15,000,000 feet of gas. Sinclair Prairie Oil Co. No. 4 Warrior, NW SW SW section 17-9-7; Cromwell sand, 3,485 feet; total depth, 3,493 feet; swabbed and flowed 150 bbls. of oil in 24 hours. A. A. and R. W. Vierson No. 3 Jones "A," NE SW NW section 11-6-6; sand, 2,435 feet; total depth, 2,474 feet; shot, 2,390-2,410 feet; swabbed 50 bbls. W. A. Delaney No. 1-A Jones, NE NW SW section 11-6-6; total depth, 2,464 feet, dry and abandoned. The Texas Co. No. 4 Janey, NW NE SW section 11-7-6, old well, deepened from 4,541 feet to 4,653 feet; plugged back to 4,538 feet; pumped 30 bbls. of oil and 180 bbls. of water in 24 hours, recompleted.

First reports of new work in Seminole County: AJ Spears No. 1 Keaton, NW cor. section 6-5-8, wildcat, building rig; Simpson & Roodhouse No. 1 Graham, SE SE NE section 9-6-6, building rig; Sinclair Prairie Oil Co. and others No. 8 Sunny, NE NE NW section 14-7-6, old well drilling deeper, drilling at 4,197 feet; J. D. Campbell No. 5 Knappenberger, NE cor. section 17-9-7, building rig; Commercial Drilling Co. No. 1 Toche, SE cor. section 8-9-7, cellar and pits; Amerada Petroleum Corp. and others No. 1 M. Davis, SW SW NE section 3-10-5, digging cellar.

Wood Oil Co. No. 2 Ashby, SE NE NW section 22-7-5, had sand at 3,125-46 feet; total depth, 3,156 feet, and swabbed 60 bbls. of oil in 24 hours. Blackwell Oil & Gas Co. No. 6 Baker, SW NW SE section 11-7-6, topped second Wilcox sand at 4,170 feet; total depth, 4,194 feet, and pumped 20 bbls. of oil in 24 hours. J. D. Campbell No. 4 Knappenberger, SE NE NE section 17-9-7, total depth, 3,452 feet, swabbed 10 bbls. of oil in one hour and gas was estimated at 2,000,000 feet.

Pottawatomie County

Two good producing wells were completed in Pottawatomie County. Sinclair Prairie Oil Co. No. 5 Deatherage, NW NE NW section 28-7-4, topped Dolomite at 4,111 feet; total depth, 4,146 feet; acidized with 1,000 gallons and swabbed 3,778 bbls. of oil in 48 hours. Amerada Petroleum Corp. and others No. 1 Parks, SE SE SW section 35-11-5, topped Wilcox sand at 4,627 feet; total depth, 4,634 feet; swabbed 750 bbls. of oil in 14 hours and was completed for allowable of 100 bbls. a day.

First reports on Pottawatomie County wells: Earl Halliburton No. 2 Pierson, SE SE NE section 9-7-4, an old well, plugged back from 3,720 feet to 3,515 feet; shot, 3,481-95 feet; pumped 42 bbls. in 24 hours and may reshoot. Same operator's No. 1 Thomas, SE NE NE section 9-7-4, old well, plugged back from 3,945 feet to 3,565 feet; shot, 3,415-3,565 feet; dry and shut down; same operator's No. 2 Thomas, NW NE NE section 9-7-4; old well, plugged back to 3,558 feet; shot at 3,522-47 feet and 3,527-47 feet; 3,400 feet of oil in hole; shut in for tanks. Falcon Oil Corp. No. 1 Vinson, NE SE NE section 13-7-4, rigging up rotary. Sinclair Prairie Oil Co. No. 6 Deatherage, NE NW NW section 28-7-4, location.

Logan County

Mid-Continent Petroleum Corp. completed No. 4 Campbell, SW SE NE section 33-17-4w, in the Crescent pool, Logan County, at 6,279 feet, total depth. It flowed 4,644 bbls. of oil in four hours and made potential of 25,772 bbls. of 41 gravity oil. Gas gauged 49,800,000 feet. Top of first Wilcox sand was 6,008 feet; second sand, 6,162 feet. Sinclair Prairie Oil Co. No. 2 Phillips, SE SE NW section 28-17-4w, topped Wilcox sand at 6,514 feet and was completed at 6,538 feet, total depth. It flowed 498 bbls. of oil in eight hours, later making potential of 1,490 bbls. Gas volume was 2,600,000 feet.

Cleveland County

A Cleveland County wildcat that has been shut down for several months was temporarily abandoned. It was Asa Lee Mayes, Inc. No. 1 Parsons, SW SW SE section 30-9-1e. Work was started in September, 1935. It was shut down at 3,510 feet, total depth, last April and has since been inactive.

Osage County

Two new wells were completed in Osage County, including a big producer in the South Burbank field. It was Carter Oil Co. and others No. 6 M. J.

Are YOU profiting by ALL the advantages found in

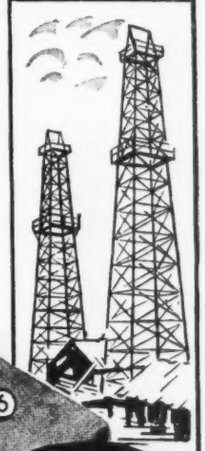
Gatke DEEP-WELL WOVEN BRAKE LINING . . .

For safe, easy handling of great overloads, Gatke Deep-Well Woven will out-perform all other brake linings. It has tremendous holding power; smooth, easy release, and practically eliminates flange wear.

An installation will *prove* that Gatke Deep-Well Woven speeds up drilling operations—safely. And, what's more, it will double ton-mile service per dollar cost.

Write for illustrated folder.

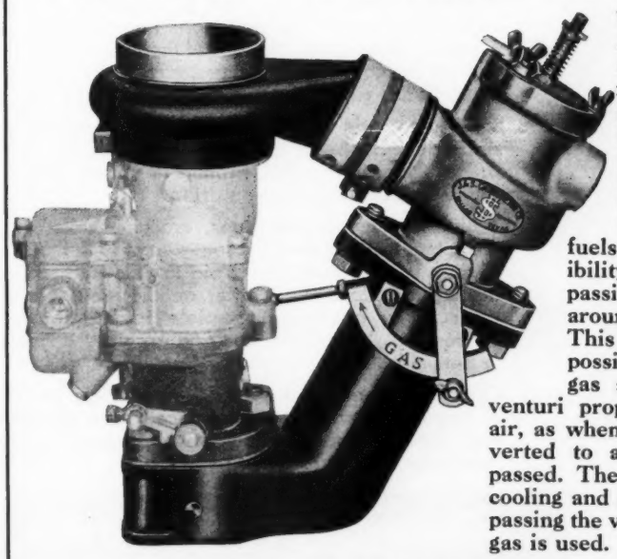
1—Purest and best grade asbestos spinning fibre
2—Soft zinc alloy wire twisted with fibre for further protection against scoring
3—Interwoven into dense mass—no layers to strip or peel
4—Saturated by special process with high heat-resisting frictional compound
5—Baked, calendered and compressed; impervious to oil, grease and moisture
6—Surface ground (one side) for easy application



GATKE CORPORATION
228 N. La Salle St. - - Chicago, Ill.

Gatke

THE J&S V-8 FORD COMBINATION



With this combination of the J&S gas mixing valve and the gasoline carburetor furnished with the Ford engine, the changeover from one fuel to the other is accomplished by simply moving a lever from one extreme position to the other. In all intermediate positions both fuels are being used. This flexibility is made possible by by-passing the gas-air mixture around the gasoline carburetor. This construction also eliminates possible throttling caused by both gas and air passing through a venturi proportioned to pass only the air, as when gasoline is used, it is converted to a gas *after* the venturi is passed. The spray of gasoline also has a cooling and contracting effect on the air passing the venturi, which is absent when gas is used.

J&S CARBURETOR CO.
705 ROSS AVENUE DALLAS, TEXAS

Cook, SE NW NE section 9-25-6. Bartlesville sand was topped at 2,665 feet; first gas, 2,673 feet; first oil, 2,683 feet; total depth, 2,700 feet in sand. It flowed 722 bbls. of oil in eight hours, with gas averaging 6,870,000 feet. Production was estimated at 2,100 bbls. in 24 hours.

Gray & Tolson No. 10 Osage, SW NE SW section 27-21-9, pumped 15 bbls. of oil and 1 bbl. of water and was completed after plugging back from 1,706 feet, total depth, to 1,103 feet. It was shot with 35 quarts at 1,094-1,103 feet. Top of Layton sand was 1,094 feet. Bay Oil Corp. No. 1-A Osage, NE NW SW section 25-22-7, an old well, was deepened from 2,966 feet to 3,005 feet in Siliceous lime, shot and acidized and swabbed 100 bbls. of oil in 24 hours, recompleted. Top of Siliceous lime was 2,954 feet.

The following new work was reported in Osage County: Ohio Osage Oil Co. No. 30 Osage, SW cor. section 9-21-9, location; Barnsdall Oil Co. No. 12 Osage, SW NE SW section 17-23-12, location; Kewanee Oil & Gas Co. No. 2 Alfred, SW NW NE section 26-26-6, digging cellar.

Latimer County

Cellar and pits were being dug at the new Latimer County test, the Cheyenne Oil Co. No. 1 Wilson, C SE SE section 15-5-18e.

Kay County

Two wildcat tests in Kay County were failures. W. O. Allen No. 1 Fulton, SE cor. section 18-27-4, topped Mississippi lime at 2,352 feet and was dry and abandoned at 3,316 feet, total depth. Denver Producing & Refining Co. No. 1-A School, SE NW NE section 13-26-1w, wildcat, topped Mississippi lime at 3,868 feet; shale, 4,106 feet; Wilcox sand, 4,123 feet; total depth, 4,141 feet; plugged back and tested but was dry and abandoned. Shell Petroleum Corp. and Continental Oil Co. No. 4 Lawrence, NE SE NW section 5-28-1w, an old well, was deepened from 2,384 feet to 2,803 feet; shot with 12 quarts at 2,789-2,801 feet, and swabbed and flowed 334 bbls. of oil in 24 hours, recompleted.

Pawnee County

Chambers and others No. 1 Bunch, SW SW NW section 4-20-9, Pawnee County, encountered salt water in sand at 990-1,017 feet, and was dry and abandoned at 1,070 feet, total depth, in shale.

Okfuskee County

Two oil producers and one gas well were completed in Okfuskee County, with one failure. J. A. Chapman No. 2 Peter King "B," SE SW SW section 30-10-9, topped Senora sand at 1,733 feet; total depth, 1,790 feet; shot, 1,750-87 feet; flowed 54 bbls. in 24 hours. Gulf Oil Corp. No. 6 Cohee, NW cor. section 31-10-9; Senora sand, 1,727 feet; total depth, 1,801 feet; shot with 60 quarts; flowed 108 bbls. of oil in 14 hours. Manahan Oil Co. No. 3 Schlatz, NW NE NW section 31-10-9; Senora sand, 1,740 feet; total depth, 1,779 feet; produced 5,000,000 feet of gas. Eagle Picher Lead & Zinc Co. No. 1 Panosky, SW SE NW section 7-11-9; Hunton lime, 3,981 feet; total depth, 4,005 feet; plugged back to 3,990 feet; acidized, no results, dry and abandoned.

New work in Okfuskee County: J. A. Chapman No. 3 Cudjo, SE SW SE section 25-10-8, spudded; J. A. Chapman and Atlantic Refining Co. No. 1 Natchee, NW NW SE section 19-10-9, spudded; Ark Royalty Co. No. 2 Creek Trading Co., SW NE NE section 19-10-9, location; Prince & Anderson No. 5 Likowski, C N half NW SW section 23-11-11, location.

Hughes County

Sinclair Prairie Oil Co. No. 16 Oliphant, SE cor section 1-9-8, was the only Hughes County completion. It topped Senora sand at 1,645 feet; total depth, 1,677 feet; shot with 30 quarts and flowed 65 bbls. of oil in 14 hours through tubing.

Three new Hughes County operations were reported for the first time. Vulcan Oil Co. No. 1 Hall, NE NE SW section 4-8-10, location; McGee No. 3 Turner-Lucas, SW cor. section 1-9-10, spudded with machine; Horman Oil Co. No. 1 Meadors, SW SE NW section 27-9-10, rigging up machine.

Lincoln County

Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 1 J. H. Guinn, NE SE SE section 31-15-3, Lincoln County, was dry and abandoned at 5,020 feet. Top of Wilcox sand was 5,013 feet. Same operators' No. 3 Cragg, NE NE NW section 12-14-3e, had Wilcox sand at 4,964-5,002 feet, and was abandoned with water in the hole at 5,006 feet, total depth.

Fleetborn Oil Corp. No. 1 Turner, NW NW SE section 28-17-5, was location for a new wildcat test in Lincoln County.

Pittsburg County

Utilities Production Co. No. 5 Koehler, SW SW SE section 11-7-18e, in the Quinton area, Pittsburg County, topped Hartshorne formation at 1,792 feet; second Hartshorne, 2,015 feet; total depth, 2,081 feet. It was shot with 200 quarts, produced 5,000,000 feet of gas and was completed.

Creek County

Completions in Creek County follow: Sinclair Prairie Oil Co. No. 5 F. Kernal, NE NE SE section 30-14-8, an old well, deepened from 3,404 feet to 4,046 feet, total depth; plugged back to 4,043 feet; shot and produced 8 bbls. of water and 2 bbls. of oil in 18 hours; abandoned. Acid Oil Co. No. 1-A Deere, SE SW NW NW section 7-17-7; an old well, deepened from 2,825 feet to 2,913 feet; plugged back to 2,421 feet; acidized; pumped 134 bbls. of 38 gravity oil and 10 bbls. of water in 24 hours. Collier and others No. 1-A Kelly, NW NE NE section 27-17-8, topped Bartlesville sand at 2,780 feet; total depth, 2,843 feet; dry and abandoned. Spartan Supply Co. No. 12 S. Lee, SE SE NE NE section 12-18-11, sand 1,470-86 feet, total depth; pumped 6 bbls. of oil daily.

New work in Creek County: Sinclair Prairie Oil Co. No. 1 Thornton, NW NW NE SW section 32-14-10, old well preparing to deepen to Siliceous lime; same operator's No. 15 Ella Jones, C S half SW NW section 3-17-7, old well to be deepened, cleaning out; Acid Oil Co. No. 3-A Deere, C NW

(Continued on Page 171)

A

Written **RECORD,**

BASIS FOR ALL PROGRESS

Can you afford to pay for drilling experience and not have a record of it? A complete file of Recorder Charts from the Martin-Decker Weight Indicator will make your Drilling Experience pay dividends.

Prehistoric man learned that the gleanings of his experiences were too valuable to be trusted to memory so he made records of them in stone, and the recording of man's experience has been the basis of the progress of civilization.

Written records are equally vital to advancement and economy in oil production. A complete record of the well you are drilling is your only real guide for the next one you drill.

With twist-offs, broken lines, crooked holes and drill stem failures ever present dangers, the driller of an oil well needs every aid to safe and sound drilling practice. A recorder on the weight indicator gives accurate, complete information on drilling weights at all times and provides a guide to better drilling each succeeding day.

The permanent chart provides a graphic record of operations which, when placed side by side with geologic data for comparison, brings out information of surprising value.

MARTIN-DECKER CORPORATION

LONG BEACH CALIFORNIA

San Joaquin Valley: A. F. McQUISTON, Bakersfield, California
Mid-Continent Distributor: REED ROLLER BIT COMPANY, Houston, Texas

Michigan Field Report

ALLEGAN AND GRATIOT HAVE INDICATIONS OF NEW POOLS

By
PAUL A. ELLIOTT

MUSKEGON, Mich., Oct. 12.—Wildcat showings of oil indicating the possibility of two new fields, one in Gratiot County, central Michigan, and the other in Allegan County, western Michigan, and a state supreme court decision upholding the power of the state conservation department to reserve mineral rights on homestead tax lands shared the spotlight as important developments last week.

When the supreme court reversed the decision of Circuit Judge Fred W. George, of St. Clair County, who had previously ruled with the plaintiff, Nick Krench, in an Ogemaw County suit involving a tract of land on which a 12,000-bbl. well was brought in more than a year ago, 56,000 acres of oil-bearing and prospective oil or gas producing state properties were released for future development.

The immediate effect is expected to be resumption of drilling activities in Larkin Township, Midland County, where Karl K. Liebrand, of Bay City, brought in the discovery well of a Berea field shortly before the suit was brought contesting the state's right to sell oil and gas rights on homestead lands. The Liebrand well was located on such a lease.

Wildcat Showings

Most important of two wildcat oil showings in so far as they had been developed last week was Max Pray No. 1 Wittig, SE SE SE section 23-11n-1w, Lafayette Township, Gratiot County, estimated good for 50 bbls. a day as the first oil well in the county. The Wittig topped the Dundee at 3,170 feet and hit the pay sands 11 feet in the limestone. For six feet the drill penetrated oil sands to 3,187 feet. When drilling was continued to 3,199 feet, the hole filled up about 300 feet with oil over night. Then the hole was carried to 3,213½ feet where bottom water was encountered. Operators were plugging back to treat the showing above 3,199 feet estimating it good for 50 bbls. daily.

Four other oil tests were drilling in the county, while four permits to drill for Michigan Stray gas were issued by the state for Gratiot tests.

Western Michigan

A showing of oil and gas expected to be tested for possible commercial production this week also was encountered in Russell Sapp No. 1 Hudson, SW NE SW section 29-2n-13w, Allegan Township and county, last week.

Although exact information as to the depth was not available, it was reported Upper Traverse oil and gas had been found at 1,300-50 feet. A flow of gas estimated from 50,000 to 100,000 feet daily and some oil in the hole were reported. Preparations were made to drill in this week.

Development of another new western Michigan gas field was assured last week when Lentz & Miller, Muskegon contractors, brought in No. 1 Zayacz, SE SW SW section 7-9n-14w, in Ravenna Township, Muskegon County for an open flow capacity of 1,014,000 feet after a shot.

Berea formation was topped at 1,165 feet with about 6 feet of gas pay to 1,171 feet. Drilling was suspended at 1,191 feet. The new well, located nearly 2 miles southwest and a like distance northwest of two previous Berea gassers brought in by Muskegon Development Co. for completed open-flow capacities of 800,000 feet and 600,000 feet daily, proved about 1,200 acres in the new field.

Negotiations for several new projects, including one to be drilled north of the gas wells by Rex Oil & Gas Co. in search of oil, were in progress, while the West Michigan Consumers Co. announced plans to lay a $50,000 pipe line to carry the gas to Muskegon industries.

James E. Flanigan, former Hart operator, has definitely decided to plug and abandon the No. 1 Croff, NE SW NW section 35-7n-9w, Vergennes Township, Kent County, one of three active deep tests, after penetrating Trenton limestone to a depth of 5,575 feet.

There were no other important new developments in western Michigan last week, though several tests are being started in Muskegon and Kent Counties.

Other Wildcat Showings

Charles Van Keuren and Keith B. Montigel, trustees, reported free oil in the Trenton at 1,225 feet, or 205 feet in the Trenton in No. 1 Hiawatha Sportsman Club and others, NE NE SW section 17-44n-9w, Garfield Township, Mackinac County, in the Upper Peninsula. They were planning to shoot before drilling deeper into the Trenton or St. Peter formations.

A flow of gas estimated at 1,500,000 feet daily was passed up in the Harley Williams No. 1 Hanson and Raae test, SE SE SE section 15-30n-1w, Charlton Township, Otsego County. A third showing was encountered at 1,571-73 feet, but drilling operations continued to more than 2,000 feet on the way to test the Dundee oil level.

Completions

Although 13 new completions were added to the Michigan record last week, deepening and acid treatment of wells previously drilled into oil and gas pay sands virtually equalled or exceeded the production gains of the new producers.

Six new oil wells added about 700 bbls. of initial compared with about 600 bbls. increase by acid treatment of wells previously drilled in. Deepening of three gassers in the Tri-Townships field of Mecosta and Montcalm counties added 118,000,000 feet of open flow capacity, while three new gassers had an aggregate open flow of only 20,500,000 feet daily. Four dry holes were completed.

Isabella County

Largest new oil well in Michigan was in Vernon Township, Isabella County, where J. V. Wicklund Development Co. several weeks ago brought in a 2,000-bbl. well.

Last week Dibble Brothers No. 1 Irwin, NW NW NW section 26-16n-4w, Vernon Township, flowed 200 bbls. in five hours and was rated good for about 500 bbls. a day in the Dundee. The well blew itself in over night after barely touching the Dundee pay sands at 3,717 feet. Six other tests are active in the township.

Midland County

Though only one completion was recorded in Midland County, five wells added about 400 bbls. of increased initial, the other four by acidizing. The new well was Pure Oil Co. No. 4-D Root, C N half NW SE section 2-13n-2w, Jasper Township, which produced 57 bbls. naturally in 16 hours at 3,438 feet and was rated good for 80 to 100 bbls. or perhaps more after acid.

Pure Oil Co. No. 4 Clark heirs, which previously made 150 bbls. naturally from the Dundee, was boosted to 400 bbls. a day by acid at 3,431 feet. It is in C N half SW NE section 2, Jasper Township. Pure No. 2 R. R. and W. J. Root, C S half NW SW, same section, also was boosted to 200 bbls. daily at 3,440 feet after plugging back from a total depth of 3,450 feet and treating with acid. Pure No. 10-C, Laura E. Root, SW SW NW section 20-13n-1w, Porter Township, made 15 bbls. after acid, or less than an estimated 25 bbls.

Pure's No. 5-C Iva E. Bond, C S half SE NW section 12, Jasper Township, filled up about 1,000 feet with oil and was acid treated with prospects of commercial production from the Dundee at 3,435 feet.

Guy Obenauer also was preparing to drill into the Dundee his No. 1 Bowland, NE SW NW section 19-15n-2w, Geneva Township, Midland County, two locations west of a producer.

Montcalm County

The Rex Oil & Gas Co. No. 2 William Strait well, NE SE NE section 2-10n-5w, Crystal Township, previously reported a failure in the Dundee, should be credited a 50-bbl. producer on the pump after acid treatment.

Daily Crude Oil Co. also increased their No. 1 Jay Fulford, SE NE NE section 35-11n-5w, Ferris Township, from a natural output of 50 bbls. to 165 bbls. daily after acid treatment. The Fulford extended the Crystal field about half a mile northward. Dundee was topped at 3,212 feet and drilling suspended 2½ feet in.

Nine other wells, including eight oil tests and two seeking gas, were ready for completion this week in the Crystal and Ferris Townships sections of the Crystal field.

Ogemaw County

One of the best recent completions in Ogemaw County fields was the Fortney Oil Co. No. 2 County Farm, NW NW SW section 20-22n-2e, West Branch Township, which made 251 bbls. in 11 hours after acid treatment. Dundee was topped at 2,593 feet and the hole drilled to 2,756 feet, or 163 feet in. Prior to treatment it was estimated the well would do 50 bbls. daily.

Sun Oil Co. completed No. 1 State Department of Conservation, NE SW NE section 1-21n-2e, Horton Township, for a rating of 10 bbls. a day. It may be abandoned, however, as too small for commercial production. It was completed at 2,630 feet, or 156 feet in the Dundee.

Groom and Ude Oil & Gas Corp. completed No. 1 LaPorte, SW NW SW section 20, Horton Township, as a dry hole at 3,270 feet after topping Dundee at 3,142 feet, too low for production.

T. F. Caldwell, Inc., put the No. 3 County Fair Grounds well, NE NW SE section 19, West Branch Township, on the pump for an estimated 25 bbls. a day. Weber Oil Co. temporarily completed No. 1 Quilici, SE SE SW section 36, also West Branch, for 18 bbls. a day from the Traverse formation at 1,995½ feet. The Fair Grounds well was 2,728 feet deep, 157 feet in the Dundee.

Gladwin County

M. F. Whitehill was swabbing No. 2 Tom Bell, NE NW NE section 11-17n-2w, Beaverton Township, Gladwin County, an east edge well in the Beaverton field drilled to 3,890 feet after topping the Dundee at 3,829 feet with production figures not yet available.

Gassers

Ide & Glavin's No. 2 Isabel Wood, C NW NW section 10-12n-7w, Belvidere Township, was increased from 20,000,000 to 89,000,000 feet by deepening from 1,243 feet to 1,258 feet. Same company increased the flow of No. 1 Bright, C SE SW section 33-13n-7w, Millbrook Township, from 16,000,000 to 63,000,000 feet daily by deepening from 1,261

(Continued on Page 162)

Elected!

No Diesel can be any better than its FUEL SYSTEM
Read the record

ON RECORD OF PERFORMANCE

● You owe it to yourself to know why the Cummins Diesel is different from any other Diesel... Send for the new Bulletin F.S.100. It gives the answer.

Ample power for drilling, pumping or generating . . . Exclusive fuel system that assures instant acceleration and unusual flexibility . . . Cold starting at a touch of the lever . . . Economical to run. Cheap to maintain . . . Light weight—easy to haul from job to job.

No wonder the Cummins Diesel is elected on its performance record and dominates the oil field through its efficient service.

MID-CONTINENT SUPPLY COMPANY
Exclusive Distributors Mid-Continent Territory • Fort Worth, Texas

CUMMINS-DIESELS

CUMMINS ENGINE CO., 1010 WILSON ST., COLUMBUS, IND.

East and East Central Texas

By
L. E. BREDBERG

TALCO AND SULPHUR BLUFF EXTENDED; NEW OIL OUTLET

DALLAS, Tex. Oct. 12.—The third producer in the Sulphur Bluff pool in Hopkins County is in process of being completed and the Talco pool, in northwest Titus and northeast Franklin counties, is receiving another extension.

Walter Goldston and others test on the H. J. Smith farm, J. A. Craft Survey, nearly a mile northeast of the Hager and others discovery well in the Sulphur Bluff pool, Hopkins County, is shut down while the crew waits for cement to set. Bottom of the hole is at 4,525 feet and the top of the saturated Paluxy sand was logged at 4,472 feet. Elevation is 448 feet. It will probably be drilled in the latter part of the week.

In the Talco pool, Titus County, Humble Oil & Refining Co. extended the producing area over a mile to the east, with No. 1 Williams, in the G. Medlin Survey, about a mile west of a dry hole which defined the pool to the east some weeks ago. This new extension well flowed 23 bbls. per hour through 2½-inch tubing. The hole is bottomed at 4,318 feet, with saturated sand at 4,231-62 feet and broken pay to the bottom of the hole. The Paluxy was topped at 4,205 feet. Elevation is 358 feet. The well was one of the three completed in the pool this week.

With Humble Oil & Refining Co.'s 8-inch pipe line carrying oil out of the field and independent purchasers taking oil through gathering systems and shipping it in tank trucks and tankcars to East Texas and other refineries, and another pipe line and refinery proposed for this field and the Sulphur Bluff pool, drilling activities are expected to increase from now on, lack of outlets having been one of the principal causes of slower drilling in the field up to last week. Some 15 miles of 5½-inch pipe has been ordered by the Talco Pipe Line Co. for a line to be laid from the field to a point on the Cotton Belt Railroad to the south, where a cracking plant is to be erected, probably at Mt. Vernon. One 55,000-bbl. storage tank will be erected in the field at once by the company. Clint W. Murchison and associates of Dallas will erect a tank of like capacity in the Sulphur Bluff pool where they have contracted for a two years' output from the leases owned by Dilworth Hager, W. P. Luse and Leon Russ in that pool. The contract price for the oil was reported as 57½ cents or 2½ cents below the price the Humble is paying for crude in the Talco field. The same associates are expected to erect a refinery to operate on Sulphur Bluff oil.

Wildcatting

Lowery and Cutler have a derrick up on the E. C. Porter lands, in the Thomas King Survey, 3 miles northeast of Chicota in Lamar County, for a wildcat test in this, one of the northern tier of East Texas counties.

J. G. Mayo No. 1 Pure-James, wildcat, on the J. T. Jones Survey, southeast of Rusk in Cherokee County, is coring ahead below 5,045 feet, showing no oil or gas when cored at 5,025-40 feet, the formation having no Woodbine characteristics. This test is several miles northeast of the small Rusk pool.

Roth & Faurot Oil and Gas Co. of Kansas has staked the first of four locations to be made in the Buffalo area of Leon County. This location is on the J. L. Shaw lands in the O. P. Reams Survey, about 1½ miles from the first well drilled by the Shell Petroleum Corp. and others in the gas-distillate pool opened by Shell about 3 years ago. Richardson and Parker have been awarded the contract for drilling the test. Gas for drilling fuel is to be taken from the Shell Petroleum Corp. and others' gas producer on the Shell-Penn block. Roth & Faurot have a block of some 7,460 acres in the area, and the first test is slated to go to 6,000 feet.

Merrill & Ogg are preparing to move in a rig on their D. H. Merrill block 2 miles south of Buffalo in Leon County. This block extends to within 5 miles of Jewett.

Phillips Brothers of Bonham, Tex., have staked location for a 3,800-foot test to the Pennsylvanian on the Lon Barker farm, in the Harrison Survey, near Ridings, and about 8 miles north of Bonham in Fannin County. The test will be on a block of 3,000 acres.

Another proposed test for Fannin County is scheduled to go to 6,000 feet according to reports from that area. A block is being assembled east of Trenton for this test. Leases having already been taken in the Bramlett, M. Moore, Wertzner and adjacent surveys.

Ordered Abandoned

R. P. Lester, Colton and others No. 1 J. C. Barrow, located in the J. D. Taylor Survey, in Kaufman County, has been ordered abandoned at a total depth of 5,968 feet after failure to sidetrack a section of drill pipe and bit could not be fished out or sidetracked. This depth is only 32 feet short of contract depth. Another test may be drilled by the operators in the area, which is on the Fault plane running from the south at Mexia north and east through the Sulphur Bluff pool in Hopkins and the Talco pool in Titus County, but the Paluxy, from which production is obtained in the latter two pools, proved barren in this deep test.

East Texas Field

Only 28 wells were completed in the East Texas field this week, all but one oil wells. Five of the completed wells were placed on the pump. Thirty-eight locations were staked in the field this week with drilling gradually diminishing although it will probably hold at the present level for some time before dropping to another level at which point it will again run along as it has been doing for the past number of weeks.

MISCELLANEOUS COMPLETIONS IN EAST TEXAS

Anderson County

Tide Water and Seaboard Oil Corporation No. 5 Campbell, 4,048½ feet, estimated 60,000,000 feet gas.

Henderson County

Cortex Oil Co. No. 1 Harton, total depth 4,100 feet, plugged back to 4,096 feet, 164 bbls. in 24 hours through one-eighth inch choke.

Navarro County

Coffield-Guthrie No. 1-S Chapman, 1,870 feet, estimated 500,000 feet gas.

Smith County

Caryoly-Hastings No. 1 Bennett Estate, 4,931 feet, dry and abandoned, elevation 435 feet.

Titus County

Halliburton No. 1 Hodd, total depth 4,330 feet, plugged back to 4,389 feet, 5 bbls. per hour, swabbing and flowing. Humble Oil & Refining Co. No. 1 Williams, 4,231-4,318 feet, 23 bbls. per hour. Schmullen and others No. 1 O'Keefe, total depth 4,435 feet, 12 bbls. per hour, swabbing.

Gregg County

Atlantic and Sun Oil Co. No. 73 Hays, 3,512-3,566 feet, 95 bbls. per hour. Fain & McGaha No. 8 Corbin, 3,537-82 feet, 25 bbls. in 15 minutes. Gregg Oil Co. No. 2-B T.&P. Railroad, 3,516-35 feet, 15 bbls. in 15 minutes. Island Oil Co. No. 2 Hensley, 3,529-85 feet, 30 bbls. in 30 minutes. Stanolind Oil & Gas Co. No. 47-B McKinley, 3,574-90 feet, 11 bbls. in 15 minutes; No. 11-B Smith, 3,499-3,529 feet, 16 bbls. in 15 minutes; No. 5-A Walker, 3,562-78 feet. 20 bbls. in 23 minutes. Sun Oil Co. No. 13 Grey, 3,630-57 feet, 15 bbls. per day on pump. Superior Oil Co. No. 23 Ingram, 3,528-58 feet, 37 bbls. in 30 minutes. Arcadia Refining Co. No. 12 Samples, 3,727-29 feet, 40 bbls. per hour. Carter & Baggett No. 3 Culver, 3,510-23 feet, 20 bbls. in nine hours on pump. Dyck Oil Co. No. 10 Blackman, 3,662-63 feet, 35 bbls. per hour. Gulf Oil Corp. No. 16 Watson, 3,522-35 feet, 75 bbls. per hour. Stanolind Oil & Gas Co. No. 6 Clayton, 3,534-3,600 feet, 60 bbls. per hour. Stanolind and Tide Water No. 7 Miller, 3,588-92 feet, abandoned. Sun Oil Co. No. 36 Cole, 3,511-39 feet, 60 bbls. per hour.

Rusk County

Gulf Oil Corp. No. 20-A Christian, 3,579-3,622 feet, 60 bbls. per hour through three-quarters inch choke. Humble Oil & Refining Co. No. 42 Peterson, 3,613-40 feet, 90 bbls. per hour. McMillan No. 15 Roberson, 3,552-3,604 feet, 5 bbls. per hour on pump. Meco Production Co. No. 9 Williamson, 3,690-91 feet, 20 bbls. per hour. Sun Oil Co. No. 24 Beall, 3,610-20 feet. 45 bbls. per hour. Falcon Oil Co. No. 8 Ashby, 3,680-94 feet, 14 bbls. in 30 minutes. Gant and others No. 17 Harris, 3,597-3,613 feet, 25 bbls. per hour. Humble Oil & Refining Co. No. 60-A Kangerga, 3,622-59 feet, 40 bbls. per hour. W. T. Mack No. 2 Wilson, 3,602-34 feet, 20 bbls. in nine hours on pump.

Smith County

H. Hanbury No. 12 Sharp, 3,713-14 feet, 40 bbls. per hour.

USED SUCCESSFULLY IN THE RODESSA FIELD—See Page 26

Texas and Louisiana Gulf

By
F. L. SINGLETON

SILSBEE PROSPECT, HARDIN COUNTY, DRAWS ATTENTION

HOUSTON, Tex., Oct. 12.—Interest along the Gulf Coast district the past week shifted to the Silsbee Prospect, northeastern Hardin County where preparations were being made to test Republic Production Co. and Houston Oil Co. No. 2 Brooks, a "relief" well which last week extinguished the operators' No. 1 Brooks that had been burning since August 5, when it caught fire shortly after a drill stem test had been made in the Cockfield sand from 6,945-82½ feet. After the burning well had been killed by pumping water through No. 2 Brooks bottomed at a measured depth of 7,059 feet, the hole was cored to 7,071 feet in sand showing oil and it is to be tested following the running of an electrical coring test of the open hole.

The outcome of this test will give some idea as to the importance of this new strike which has been questioned due to the fact that it has been impossible to estimate the production that was consumed by the burning well. The discovery of commercial production from the Cockfield sand in this area opens a vast territory for development and the same operators are moving in a rig across the line in Tyler County for another Cockfield test to be drilled on the Hurd lease near the town of Spurger in the Norman Hurd League.

Another test in Hardin County which is seeking Cockfield production around the flanks of the old Sour Lake field, is Kirby Petroleum Co. and Woodley Petroleum Co. No. 1 Minerva Merchant Subdivision which is coring in shale at 4,575 feet after encountering a showing of oil and gas in sand from 4,490-4,571 feet. Location is in the Stephen Jackson Survey.

At the Clay Creek field in Washington County, Sun Oil Co. has moved in 2½-inch tubing and other necessary equipment to test No. 1 H. Lauter located on the southeast flank of the dome which is bottomed in the Wilcox sand at 7,454 feet. This test was scheduled to be drilled to the Woodbine sand expected around 9,000 feet, but operations stopped when oil and gas appeared in the ditch. A protection string of 7-inch casing was cemented at 7,445 feet and the well has been shut down for several weeks while the company cleared titles. Should No. 1 Lauter be completed for a producer it will open a new horizon for the field which heretofore has been developed from the Cook Mountain, Mount Selman, and Wilcox horizons from depth of 1,100 to 1,500 feet.

Another good producer for the south extension area of the Dickinson field, Galveston County, was added by the completion of Humble Oil & Refining Co. No. 10-A Maco Stewart for an initial production of 32 bbls. per hour through a quarter-inch choke with tubing pressure 1,700 pounds and casing pressure 1,700 pounds. Broken sand showing oil was topped at 8,683 feet and it was completed at a depth of 8,707 feet. Location is in the W. K. Wilson Survey. To the southeast, Pan American Production Co. has spudded No. 2 Craig, located 2,247 feet south and 421 feet east from the northwest corner of a 104.7-acre lease. On a potential test, the company's No. 1 Craig which extended the field 2,200 feet east, flowed 516 bbls. of oil through a quarter-inch choke from a depth of 8,300 feet.

To the south at the Green Lake field, Sun Oil Co. has abandoned No. 3 Hughes at 3,920 feet after an eight-minute drill stem test showed salt water and mud. It is located 933 feet south of the discovery well in the William C. Baker Survey. Southeast of the discovery well, same company is rigging up for No. 4 Joe Hughes located in the same survey.

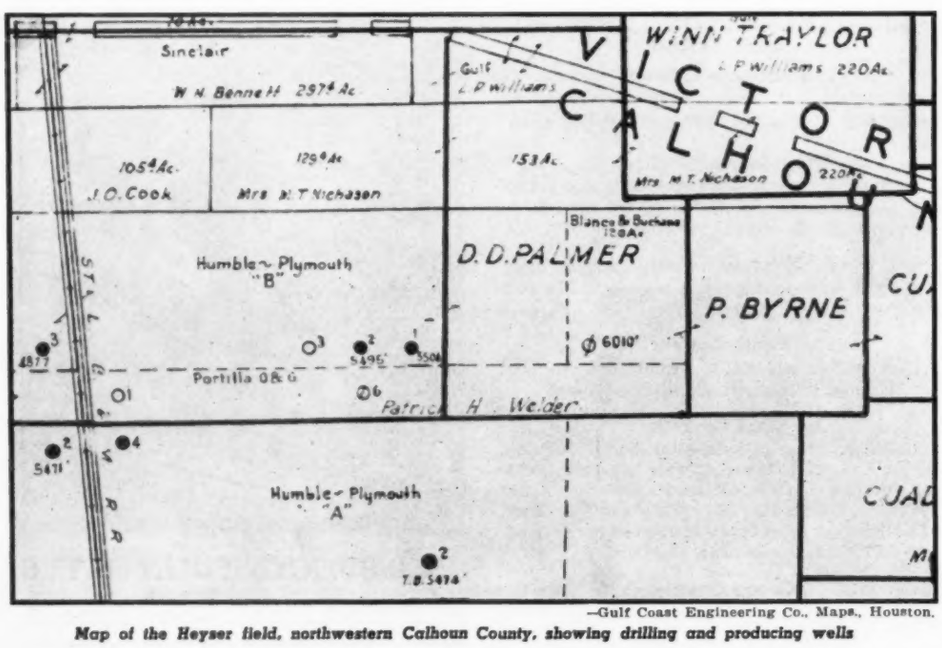
Another producer has been added to the Cotton Lake field by the completion of McCarthy No. 3 Kilgore which was completed through perforated casing in the Frio sand at 6,330 feet for an initial production of 20 bbls. of fluid per hour. The well is said to be cleaning itself and no accurate gauge is available. The hole is bottomed in salt water at 6,426 feet and it was completed in the top 4 feet of a sand section cored from 6,338-50 feet. It is a west offset to Humble Oil & Refining Co. No. 1 Dutton, a dry hole. To the northeast in the Turtle Bay field, Sun Oil Co. was drilling plug preparatory to completing No. 1 C. J. Chambers, bottomed in the Marginulina sand at 6,600 feet with 7-inch casing cemented at 6,572 feet. The Marginulina sand was topped at around 6,220 feet which places it a few feet higher than the other wells drilled by Stanolind Oil & Gas Co. to the west and south. Sand and sandy shale showing oil was cored from 6,584-97 feet.

Humble Oil & Refining Co. is rigging up for an interest outpost test to be drilled 1 mile west of production at the Anahuac field in Chambers County. No. 1-C A. D. Middleton is located 466 feet from the west line and 1,193 feet from the north line of the A. Middleton Survey, west of the Broussard and Hebert lease in section 73. In the north part of the field in the James McGahey Survey, Humble Oil & Refining Co. purchased the remaining one-eighth interest held by McCarthy, Inc. on the R. M. White lease, and it will be developed hereafter by Humble.

On the Seadrift Prospect, Calhoun County, Continental Oil Co. No. 1 Vandenberg (Austin Estate) is bottomed in a sidetracked hole at 8,750 feet, with 6-inch casing cemented at that depth and the operators are preparing to perforate the casing to test sand streaks that showed oil and gas from 8,675-8,715 feet. The company has drilled several wells on this prospect, but all were abandoned due to heaving shale trouble. Location is in section 12, Block H.

In the northwestern part of the county, in the Heyser field, two more producers were completed. In the J. M. Rios Survey, Humble Oil & Refining Co. No. 4-A Welder reperforated the casing from 5,465-68½ feet with nine shots, and it flowed 157 bbls. per day through a three-sixteenths inch choke with tubing pressure 775 pounds and casing pressure 1,175 pounds. To the east in the A. Sisneros Survey, Portilla Oil Co. No. 1 Welder was flowing pipe line oil by heads from a depth of 5,494 feet.

Across the line in Victoria County, the interesting wildcat of Plymouth Oil Co. No. 1 J. J. Welder located in the S. A. Baldwin Survey, is reaming at 6,084 feet after a drill stem test failed at 5,903 feet. Several showings of oil and gas have been encountered below 5,700 feet. In the Hughes field, Portilla Oil Co. No. 2 P. H. Welder showed salt water on a drill stem test made in sand at 5,010 feet and it is shut down. It was originally completed as an oil well through perforated casing from 4,846-53 feet, but was deepened after its flow turned to salt water.



—Gulf Coast Engineering Co., Maps., Houston.

Map of the Heyser field, northwestern Calhoun County, showing drilling and producing wells

19 New Locations

Of the 19 new locations announced for the district, four were wildcats, and two are to be drilled on interesting prospects in the north and northeastern parts of Brazoria County. On the Sandy Point Prospect, Bunte Oil & Gas Co. staked No. 1 J. A. Fite in the center of the northeast 10-acre tract in the D. Talley Survey, while to the southeast, Beatty, Bowles and Borsodi have derrick up for No. 1 Truska, located on what is known as the Chocolate Bayou Prospect in Lot 4, Block 8, H.T. &B. Survey No. A-497.

Nine miles southwest of the town of Huntsville in Walker County, Roswell Oil Co. is moving in material for No. 1 J. Osborn located 1,000 varas north and 500 varas east of the southwest corner of the James Jordan Survey.

South Louisiana

With the exception of a new producing horizon being opened in the Gillis field, Calcasieu Parish, developments in Coastal Louisiana were quiet. On

(Continued on Page 182)

Kansas Developments

NEW OIL POOL IN STAFFORD COUNTY; FIELD WORK GAINS

By DAL DALRYMPLE

After heavy rains and a lull in operations throughout the Kansas oil fields, work revived during the past week with many new locations announced in both wildcat and proven areas and with several good producing wells completed or near completion. Oil men familiar with the Kansas scene are predicting the revival in activity will continue, with a busy fall and winter following a quiet summer.

A new pool was opened in southwestern Stafford County at Skelly Oil Co. and others No. 1 Kipp, SE SE NE section 27-25-14w. It topped Lansing lime at 3,687 feet; had pay at 3,894 feet and was bottomed at 3,905 feet. It swabbed 158 bbls. of oil and 85 bbls. of water in 23 hours, but the water was believed to be coming from further up the hole. Gas gauged 1,380,000 feet. Operators were still testing. This is a community test in which Texas Co. owns 48 per cent, Skelly Oil Co. 40 per cent and Columbian Fuel Co. 12 per cent. Location is on a 6,000-acre block.

Simar and others No. 1 Leicker, NW SE section 12-15-18w, wildcat in southern Ellis County, was showing oil and looked like a probable pool opener. It had Siliceous lime at 3,606-09 feet. Coralena Oil Co. opened a new producing area in the Sellens district, Russell County, at their No. 1 well, NW cor. section 17-15-13w. After acidizing, it produced 1,276 bbls. of oil in 16 hours from Topeka lime at 2,881 feet.

Work was due to start at another wildcat test in Pawnee County. Kessler & Thier, Inc., were reported to have staked location for No. 1 James Shea, NE section 22-21-17w, 3 miles northwest of Larned and about 14 miles southwest of the Pawnee County discovery well, completed recently.

Importance of the Peter pool, in extreme southeastern Barton County and south of the Silica field, was enhanced by the showing of Buchanan & Alexander No. 2 Langfeld, NE SW section 14-20-11w, on a 60-day retest. It made new potential of 2,002 bbls. on pump and without acid treatment, compared with former production of 1,689 bbls. Production is from Siliceous lime, total depth 3,298 feet. The Peter pool was opened last May 22 by Buchanan & Alexander at No. 1 Langfeld, and the eighth well in the pool, a 2,000-bbl. producer, has just been completed by the Atlantic and Lario companies.

Douglas and Sage No. 1 Patton, SW cor. section 5-21-7w, new pool opener northwest of the Hauschild pool, Rice County, was shut in for tanks after getting pay at 3,331-37 feet, in Conglomerate topped at 3,329 feet.

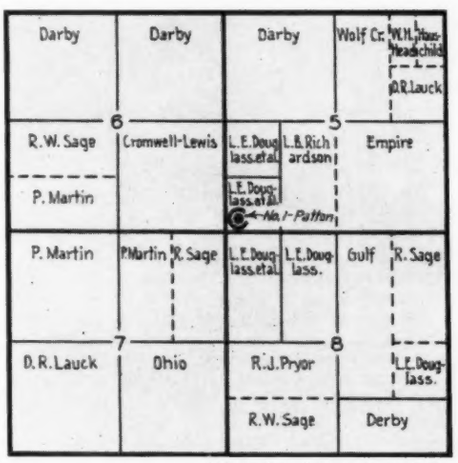
Twenty oil producing wells, one gas well and 13 dry holes were completed in Kansas during the week.

Ellis County

Completions in Ellis County included two wildcat discovery wells and two wildcat failures, three producing wells in the Bemis sector and one old well deepened and recompleted. Kansas Development Corp. No. 1 Haller, SE SE SW section 10-11-18w, wildcat north and west of the Bemis sector, made potential of 531 bbls. of oil, cutting 2 per cent water, and was completed at 3,050 feet, total depth. Before acidizing it flowed 161 bbls. in 16 hours. Top of Anhydrite was 1,190 feet; Topeka 2,915 feet; first oil, 3,046 feet. Bradley Oil Co. and others No. 1 Penney-Wann, SE cor. section 13-15-20w, wildcat in southwestern Ellis County, topped Anhydrite at 1,277 feet; Topeka 3,065 feet; Dodge 3,318 feet; Kansas City 3,337 feet; Marmaton 3,631 feet; sand 3,653-57 feet, total depth. It made potential of 420 bbls. of oil in 22½ hours.

Other completions: Uscan Oil Co. No. 3 Bemis, SE NE NE section 21-11-17w; Anhydrite 1,070 feet; Siliceous lime 3,374 feet; total depth 3,383 feet; potential 2,260 bbls. Same operator's No. 5 Bemis, NW NE NE section 21-11-17w; Anhydrite 1,030 feet; Siliceous lime 3,339 feet; total depth 3,342 feet; potential 1,307 bbls. Phillips Petroleum Co. No. 2 Bemis, SE SE NE section 21-11-17w; Anhydrite 1,124 feet; Siliceous 3,437 feet; pay 3,458-61 feet, total depth; swabbed 49 bbls. in 24 hours; acidized; potential 304 bbls. Empire Oil & Refining Co. No. 1 Samuelson, NE SE SE section 31-11-16w; wildcat; Anhydrite 1,270 feet; Conglomerate 3,605 feet; Siliceous 3,735 feet; hole full of water 3,740-44 feet, total depth; abandoned. Jones & Shelbourne No. 1 Gunther, SE SE SW section 9-11-19w; wildcat; Anhydrite 1,417 feet; Oswald 3,352 feet; Siliceous 3,646 feet; water 3,661-64 feet; total depth 3,703 feet, hole full of water, abandoned.

Deep Rock Oil Corp. deepened No. 1 Hadley, SW SW NW section 20-11-17w, from 3,446 feet to 3,636 feet, where it had a hole full of water, and plugged back to 3,455 feet. It was acidized and later pumped 17 bbls. of oil and 20 bbls. of water. Top of Siliceous lime was 3,590 feet.



—Mid-Continent Map Co., Wichita.

L. E. Douglass and Dick Sage have opened a new Rice County pool at No. 1 Patton, SW cor. section 5-21-7w. It had Conglomerate pay at 3,329-37 feet. It is north of the Hauschild area

New work in Ellis County: Gulf Oil Corp. No. 1 Walter, SW NW SE section 2-12-18w, moving in material; Derby Oil Co. No. 1 Copeland, NW NW SE section 26-14-19w, building rotary rig.

Mutual Oil Co. No. 1-A Johnson, NW SW NE section 9-13-19w, had pay at 3,580-85 feet; total depth 3,600 feet, and production was estimated at 300 bbls. of oil per day.

Russell County

Coralena Oil Co. had the largest Russell County completion of the week at No. 3 Trapp, SW SE SE section 30-15-13w. After acidizing with 4,000 gallons, it pumped 1,726 bbls. of oil in 17 hours; later, at total depth of 3,256 feet, it flowed 100 bbls. an hour for 10 hours and made potential of 2,397 bbls. Anhydrite was topped at 870 feet; Oswald 3,006 feet; Siliceous 3,245 feet.

Joe Aylward No. 2 Ginther, NW SE NW section 19-12-15w, topped Anhydrite at 930 feet; Topeka 2,710 feet; Oswald 3,006 feet; hole full of water and showing of oil 3,096 feet; total depth 3,110 feet; plugged back to 3,085 feet and acidized. It pumped 20 bbls. of oil in 24 hours, completed. Phillips Petroleum Co. No. 2 Boxberger, C E half SW NW section 24-14-15w, was completed at 3,387 feet, total depth, as a salt water disposal well.

The following new work was reported in Russell County: Central Petroleum Co. No. 2 Rusch "A," C N half SE SW section 19-12-15w, rig and moving in tools; Alva Billings No. 1-A Herbel, SE SE SW section 26-14-14w, digging cellar and moving in rotary; Central Petroleum Co. No. 2 Foster "B," SE SE NE section 3-14-15w, rig on ground; Darby Petroleum Corp. No. 1 Dumler "C," NE cor. section 11-14-15w, location; W. I. Southern, Inc., No. 8 Shaffer, SW NW NE section 31-15-13w, skid in rotary rig.

Bridgeport Machine Co. No. 1 Mermis, SE NE SW section 33-13-15w, was to retest after making potential of 129 bbls. of oil from Gorham sand at 3,312-16 feet, total depth. Empire Oil & Refining Co. No. 8 Johnson, SE SW NE section 2-14-15w, made potential of 308 bbls. of oil after acidizing with 3,000 gallons, but was drilling ahead at 3,125 feet. It topped Oswald lime at 3,064 feet, with oil showing at 3,069 feet. Braden & McClure No. 1 Peterson, NW cor. section 12-14-15w, topped Siliceous lime at 3,291 feet; was bottomed at 3,294 feet; set 5-inch casing at 3,291 feet, and was cleaning out. It had 2,800 feet of oil in the hole. Coralena Oil Co. No. 8 Trapp, NW SE SE section 30-15-13w, had Siliceous lime at 3,255 feet; total depth, 3,259 feet, and 3,000 feet of oil rose in the hole in six hours. It was waiting after acidizing with 4,000 gallons.

Estimated Daily Production

Estimated daily average production in Kansas for the week ending October 10 and for the preceding week is as follows:

	Barrels	
	Oct. 10	Oct. 3
Oxford City	3,750	3,800
Burrton	13,875	13,975
Ritz-Canton	5,850	5,850
Hollow-Nikkel	3,775	3,800
Voshell	3,000	2,975
Ellsworth County:		
Lorraine-South Lorraine	4,850	6,070
Other pools	1,547	1,135
Rice-Barton Counties:		
Chase	7,275	8,435
Raymond	3,325	2,745
Silica	9,025	13,460
Keesling	2,300	2,705
Hauschild	2,175	2,130
Miscellaneous Rice	5,744	6,142
Miscellaneous Barton	3,185	4,263
Russell County:		
Fairport	2,355	2,380
Gorham-East Gorham	4,300	4,775
Russell	1,795	1,815
Sullivan	1,500	1,550
Other pools	7,000	7,519
Sedgwick County:		
Valley Center	1,260	1,260
Greenwich	1,350	1,350
Robbins	1,150	1,145
Eastborough	840	830
Other pools	400	393
Ellis County	2,640	2,886
Kingman County	510	472
Stafford County	1,610	1,383
Greenwood County	9,750	10,000
Butler County	17,500	17,850
Other fields	25,764	24,707
Total Kansas	149,400	157,800

Rice County

Three producing wells and one failure were completed in Rice County. J. H. Tatlock, SW NE NW section 6-20-10w, Silica pool, had Siliceous lime at 3,269-81 feet, total depth, and flowed 2,153 bbls. of oil naturally for 24-hour potential. Mid-Continent Petroleum Corp. No. 1 Wood, NE cor. section 4-20-10w, made potential of 1,933 bbls.

of oil in 24 hours, down 3 hours, and was completed at 3,316 feet, total depth. Top of Kansas City lime was 3,035 feet; Siliceous 3,307 feet.

In the Chase pool, Roy Ramsey No. 6 Hilton, C S half SW SW section 6-20-9w, flowed 918 bbls. of oil naturally and was completed in Siliceous lime at 3,293-97 feet, total depth. Top of Topeka lime was 2,550 feet; Kansas City 2,940 feet.

C. E. Skiles and others No. 3 Edwards, NE cor. section 3-18-8w, had a hole full of water and was dry and abandoned in top of Siliceous lime at 3,422 feet, total depth.

Thirteen new operations were reported in Rice County. Hanna and others No. 1 Brothers, SE SE NW section 25-20-8w, was location for a wildcat south of Lyons; J. H. Tatlock No. 11 Bercheit, SE SW NW section 6-20-10w, was moving in rotary; same operator's No. 12 Bercheit, NW SE NW section 6-20-10w, location; Tatlock No. 13 Bercheit, NE SE NW section 6-20-10w, moving in material; same operator's No. 14 Bercheit, SW SW NW section 6-20-10w, location; Stanolind Oil & Gas Co. No. 6 Specht, SW NW NE section 6-20-10w, building rotary rig; Texas Co. and others No. 1 Schartz, NE SE SE section 33-19-10w, an old well, rigging up to deepen from 3,320 feet; same operator's No. 2 Schartz, SE cor. section 33-19-10w, and No. 3 Schartz, SW SE SE section 33-19-10w, locations; Mid-Continent Petroleum Corp. No. 2 Woods, NW NE NE section 4-20-10w, building rotary rig; same operator's No. 3 Woods, SE NE NE section 4-20-10w, building rotary rig; Sinclair Prairie Oil Co. No. 1 Proffit, NW cor. section 3-20-10w, moving in material; Texas Co. No. 4 Kleile, SW cor. section 34-19-10w, rotary rig.

Slick, Pryor & Lockhart and others No. 4 Moran "A," SW NW NW section 4-18-10w, topped Siliceous lime at 3,254 feet; was bottomed at 3,273 feet; swabbed 577 bbls. of oil in 24 hours and was to acidize. Continental Oil Co.'s S. Ainsworth "A" well, SW SW NW section 30-18-7w, swabbed 116 bbls. of oil and 70 bbls. of water in five hours after acid treatment. Top of Siliceous lime was 3,153 feet; total depth 3,207 feet.

Barton County

Lario Oil & Gas Co. and Atlantic Refining Co. No. 2 Peters, C N half N half NW section 24-20-11w, in the Peter pool, flowed 2,063 bbls. of oil naturally for a 24-hour potential, down two hours, and was completed at 3,274 feet, total depth. Top of Siliceous lime was 3,265½ feet. One other producing well was completed in Barton County at Republic Oil Co. No. 2 McLean, SE NW SE section 25-17-11w. It topped Siliceous lime at 3,280 feet; total depth 3,293½ feet; was acidized with 2,000 gallons and made potential of 673 bbls. of oil.

G. H. Rose and W. H. Lant No. 1 Redetzke, NE NW NW section 10-16-11w, wildcat southeast of the Davidson pool, encountered water and was dry and abandoned at 3,346 feet, total depth. Top of Anhydrite was 700 feet; Topeka 2,615 feet; Kansas City 3,020 feet; Conglomerate 3,312 feet; Siliceous 3,326 feet.

Only one new Barton County test was reported. It was Lario Oil & Gas Co. and Indian Territory Illuminating Oil Co. No. 2 Meyers, SW SE SE section 13-20-11w, cellar.

Reno County

Two producing wells and two wildcat failures were completed in Reno County. Olson Drilling Co. and Shell Petroleum Corp. No. 8 Goering "A," C N half N half SW section 26-23-4w, Burrton field, pumped and flowed 2,028 bbls. of oil in 24 hours and was completed at 3,575 feet, total depth. Top of Chat was 3,230 feet; Misener 3,565 feet; Hunton lime 3,568 feet. In the Hilger area, Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 3 Hilger "A," NE NW NW section 16-26-4w, topped Chat at 3,615 feet; Viola lime 4,035 feet; total depth 4,041 feet; made potential of 1,227 bbls. of oil naturally in 24 hours, completed.

Fred Rust No. 1 Schmucker, SE SE SW section 29-22-8w, wildcat in northern Reno County, topped Kansas City lime at 3,150 feet; Mississippi 3,650 feet; Viola 3,918 feet; Siliceous 4,070 feet, and was dry and abandoned at 4,100 feet, total depth. L. R. Page and others No. 1 Mueller, C S half SW NE section 25-24-5w, wildcat northwest of Haven, topped Kansas City at 2,640 feet; Chat 3,357 feet; base Mississippi 3,580 feet; Misener 3,695 feet; Hunton 3,703 feet; Sylvan 3,718 feet, and was dry and abandoned at 3,827 feet, total depth.

New work in Reno County: Carlock and others No. 1 Brown Realty Co., NW NW NE section 32-22-10w, wildcat, rotary rig; Torry & Feaster No. 1 Schroeder, SE cor. section 1-23-7w, building rig; Shell Petroleum Corp. No. 1-A Mauck, SW NW NE section 14-26-9w, disposal well, drilling at 1,327 feet.

McPherson County

Two small producing wells were completed in McPherson County. Ohio Oil Co. No. 5 Decker, NE cor. section 20-21-1w, Graber district, made potential of 188 bbls. of oil, with 50 bbls. of water in 15 hours after acid treatment. It had Hunton lime at 3,293-3,328 feet; total depth 3,340 feet; plugged back to 3,328 feet. Top of Chat was 2,916 feet. Continental Oil Co. and others No. 2 Jones, NE NE SW section 32-21-1w, topped Chat at 2,930 feet; Hunton lime 3,297 feet; total depth 3,333 feet. After third acid treatment it made potential of 76 bbls. of oil.

Two new tests were started in McPherson County: Shawver & Smith No. 2 Kaedi, NE NW NW section 21-19-1w, an old well deepening from 2,968 feet, drilling at 3,042 feet; Reeves & Morine No. 1 Peters, NW NW SW section 24-19-3w, cellar.

Harvey County

The only completion in Harvey County was Palmer and others No. 1 E. J. Haury, C NE NE section 11-23-2w, Halstead area. It topped Chat at 2,962 feet; total depth 2,996 feet, and flowed 549 bbls. of oil naturally in 24 hours.

First reports were made on the following Harvey County tests: Western Kansas Oil & Refining Co. and others No. 1 Keller, C E half SE SE section 35-22-2w, location; same operator's No. 1 Dreese, C E half NE NE section 2-23-2w, cellar and pits; Palmer and others No. 2 McBurney, C SW SW section 12-23-2w, cellar and digging pits; Hipple and others No. 1 Morris, NW NW SW section 30-23-3w, building standard rig; Inca Production Co. No. 1 Moore, C NE NE section 26-24-3w, wildcat, rigging up rotary.

Ellsworth County

Carter Oil Co. No. 6 Ogden C-39, SW cor. section 26-17-9w, Lorraine area, Ellsworth County, flowed 1,398 bbls. of oil naturally in 24 hours and was completed at 3,174 feet, total depth. Top of Siliceous lime was 3,170 feet. Bradley & Scanlon and others No. 8 Monney, SE cor. section 14-17-9w, was completed as a salt water disposal well at 3,886 feet, total depth, taking 200 bbls. of water per hour by gravity. It topped Siliceous lime at 3,189 feet, where it had 200 feet of oil and 2,500 feet of water in the hole.

Greenwood County

Houston-Oklahoma No. 5 Berry, C W half SW SW NE section 28-23-13, was the only producing well completed in Greenwood County. It topped Mississippi lime at 1,735 feet; had pay at 1,750-65 feet; was bottomed at 1,767 feet, and after a shot pumped 50 bbls. of oil in 24 hours. Marshall and others No. 1 Larue, C N half NE NE section 21-26-13, was dry and abandoned at 1,275 feet, total depth.

Dunn & Lewis No. 2 Dawson, C NE NE section 27-26-13, new wildcat in Greenwood County, was drilling at 700 feet. Ward McGinnis No. 2 Prather, NE NE SE section 15-25-11, was drilling at 840 feet.

Woodson County

Four failures were completed in Woodson County. Holmes and others No. 1 Holman, SE NE NE section 25-25-14, wildcat, topped Mississippi lime at 1,450 feet, had a showing of oil and gas at 1,456 feet, but was dry and abandoned at 1,492 feet, total depth. Ladd and others No. 1 Lauber, NW cor. section 4-26-14, wildcat, was dry and abandoned at 1,072 feet, total depth. C. L. Sheedy and others No. 4 Tipton, NE NE NW section 28-25-14, had Bartlesville sand at 1,379-1,405 feet; Mississippi lime 1,507 feet, and was dry and abandoned at 1,541 feet, total depth. Same operators' No. 1 Rehmer, C S half N half SE section 22-26-14, had sand at 1,309-56 feet; Mississippi lime 1,403-21 feet, total depth, with a hole full of water; plugged back to the sand and shot with 480 quarts, produced 2 bbls. of oil per day, but was dry and abandoned.

New work in Woodson County: Elbar Corp. No. 3 Opperman, SW NE NE section 27-23-14, drilling at 300 feet; Marshall and others No. 1 Weidie, SE SE SW section 17-25-14, machine.

Cowley County

Lloyd, Frost & Study completed another good producing well in the Weathered pool of Cowley County at No. 1 McKinley "B," SE NE NW section 33-31-3. It had Siliceous lime at 3,284-3,306 feet; total depth 3,315 feet; and made potential of 1,913 bbls. of oil in 24 hours.

The following new work was reported in Cowley County: Wakefield and others No. 1 Tinker, NW NW SE section 26-32-3, wildcat, location; C. H. Cross No. 1 Cook, SW cor. section 6-32-6, wildcat, location; Sinclair Prairie Oil Co. No. 22 Kukuk North, NE NW NE section 24-32-4, cellar; Roth & Faurot No. 2 Guthrie, section 30-33-8, NE cor., Lot 13, drilling at 810 feet.

Trees Oil Co. No. 3 Littell, C W half NE section 19-30-4, topped Bartlesville sand at 2,860 feet; total depth 2,890 feet; was shot with 60 quarts, oil rose 2,000 feet in the hole and it was cleaning out. Moore and others No. 2 Radcliffe, SW cor. section 4-33-7, was taking potential. It topped Chat at 2,857 feet; had pay at 2,887-90 feet, total depth, and swabbed 120 bbls. of oil in 18 hours before beginning test.

Grant County

Columbian Fuel Co. No. 1 Webster, C NE section 34-28-36w, Grant County, was shot with 30 quarts at 2,720-50 feet, total depth, produced 5,000,000 feet of gas and was completed. First gas was found at 2,535-2,720 feet, gauging 3,000,000 feet.

Sumner County

No wells were completed in Sumner County but five new operations were reported, as follows: Slick and others No. 4 Murphy, SW SE SE section 32-31-1w, location; Stelbar Oil Corp. No. 10 Erker, SE SW SW section 33-31-1w, building rotary rig; Continental Oil Co. No. 1 Rothrock, NW cor. section 4-32-1w, building rotary rig; Rose-Spring Drilling Co. No. 1 White, NE NE SW section 5-32-1w, digging cellar; Olson Drilling Co. and Shell Petroleum Corp. No. 5-A Community, NW cor., Lot 12, Block 22, section 11-32-2e, building rig.

Marion County

Harwood Oil Co. and others were building standard rig for No. 1 W. H. Mott, NE cor. section 2-17-4, wildcat north of Lost Springs pool in northern Marion County.

Trego County

Dawson & Tharpe No. 1 Wilson, C NE NE section 22-11-23w, only new test reported in Trego County, was a cellar.

Rush County

One new test was reported in Rush County. It was Morgan & Flynn No. 1 Moore, NW cor. section 25-18-16w, location.

Stevens County

First reports were made of three new tests in Stevens County, as follows: United Production Co. No. 1 Christopher, C W half W half SW section 2-33-39w, location; Interstate Production Co. No. 1 Light, C NE section 23-33-39w, moving in material; same operator's No. 1 Buddenburg, C NW section 26-33-39w, building rotary rig.

Eastern Fields

(Continued from Page 138)

location on the J. R. Boyce, now Aubrey Collins, farm. In Grant district on this river, Smith and Hendershot have a location for a test on the Alva H. Phillips now Mary Phillips farm.

In Tyler County, Dr. E. C. Hartman has a location for a test on the J. J. Mitchell now W. M. Martin farm on Buffalo Creek in Union district. In Wetzel County, Null and Moorehead are drilling a test on the Jackson Hostutler farm in Church district. In Wirt County, C. H. Blauser is spudding a test on the Zora Deem farm in Clay district.

West and North Texas

By
L. E. BREDBERG

OLD KMA POOL REVIVED BY DISCOVERY OF DEEPER PAY

FORT WORTH, Tex., Oct. 12.—The Cochran County discovery of Cascade Oil Corp., Honolulu Oil Corp. and Devonian Oil Co. on the E. B. Duggan lands, in Labour 13, League 55, Oldham County School Lands Survey, in the southeast corner of the county, is looking still better than it did a week ago, although pipe has only been set and cemented with 100 sacks and no test has been made. When the pipe was run 5,000 feet of oil was found in the hole, which is bottomed at 5,038 feet, some 3,800 feet of oil rising during the few days the crew was waiting for the casing, which was cemented at 4,945 feet. It looks better, in the same length of time it was allowed to set, than did the southeast Yoakum County discovery opened by the first two companies named a year ago, and is sure to make a commercial producer.

The Yoakum County discovery was drilled into water then plugged back and treated before it was put on production and made an initial production of better than 500 bbls. per day. This Cochran County discovery is only 18 feet in the pay, topped at 5,020 feet, in lime, with probably some distance to drill before water would be encountered. It is expected to be drilled a little deeper unless it starts flowing at the present depth when the plug is drilled, which will be in the next few days.

This is the sixth deep test drilled in Cochran County, five of which were scattered out in the central portion, the deepest going to 5,539 feet and the shallowest to 4,000 feet.

Winkler Wildcat

The second important feature of the week was the completion of a wildcat in northern Winkler County, near the New Mexico line, for a good producer, opening another producing area for the county which will probably lead to the linking of the Leck pool in Winkler with the Eaves pool across the line in New Mexico.

This outpost, Bert Fields, Dave Finley and Cherry No. 1 Walton, located 330 feet east of approximately the center of the west line of section 3, Block C-23, is 2 miles northwest of the Leck pool and 2½ miles south of the Eaves pool. It was acidized with 3,000 gallons and after cleaning itself 2 hours into pits, flowed 50 bbls. per hour for 3 hours, through three-fourths inch choke on tubing, proving a well of merit as well as a discovery. Total depth of the hole is 3,204 feet. Acidizing was of material benefit in increasing production as it made only 7 bbls. of oil per hour before treating. Offsets will be staked immediately for other tests, the owners of this discovery owning the offsets in three directions from the well. This well will also start drilling between the pools in expectation of proving up a large amount of new acreage on both sides of the state line.

Glasscock Wildcat

The Glasscock County wildcat of Floyd C. Dodson and Duffey on lands of the Carter heirs, in section 8, Block 33, 3s, T.&P. Survey, about 5½ miles south and slightly east of the World pool in the north central part of the county, is showing for a pumping well estimated good for from 300 to 400 bbls. per day after acidizing with 3,000 gallons at plugged back depth of 2,664 feet. It has been swabbing at the rate of 250 bbls. per day, but pumping equipment was being rigged up and a test will be made early this week. Total depth was formerly 2,669 feet where it struck sulfur water which forced the plugging back job.

This well opens an entirely new pool in the Permian lime, and will consequently bring about a renewal of activity in the county, especially in its immediate area where offsets will probably soon be started.

Schleicher Test to be Acidized

The Ordovician test of the Magnus Oil Co. on the Judkins and Spencer lands, 14½ miles southeast of Eldorado, Schleicher County, located in section 4, W. W. Russell, Grantee, Survey, topped the Ellenburger lime at 5,902 feet after logging showings of oil and gas at 5,690-5,710 feet, and showings of oil at 5,350-90 feet and 5,905-20 feet. It ran into salt water at 5,710-35 feet and the crew has run 5½-inch casing between 5,765 and 5,780 feet to shut off the water before acidizing with 2,000 gallons. Total depth of the hole was 6,527 feet, but it has been plugged back to 5,780 feet. The company has leases on 3,840 acres, obtained from the Pure Oil Co.'s large block.

Dawson County Wildcat

The extreme wildcat of Ray Albaugh and others on the Robinson lands in section 46, Block M, in northwest Dawson County, is to be shot or acidized, or both, after drilling to 5,020 feet without showing any change in the quantity of oil in the hole. There is about 4,200 feet of fluid in the hole. Three weeks ago this test created considerable interest when it was cleaned out and a showing of oil reported, but so far the showings have not increased to an amount that has created any leasing or royalty buying of importance.

Gaines Discovery Shot

The Gaines County discovery of the Landreth Production Co. on the Kirk lands, in section 22, Block 21-A, about 9 miles southwest of Seminole, which was brought in several weeks ago for a small well after plugging back from 4,870 to 4,825 feet to shut off water, drilling out to 4,850 feet, was shot with 500 quarts of nitroglycerin this week at 4,694-4,842 feet, but apparently no increase in oil was brought about by the shot. After shooting it was swabbing around 42 bbls. of oil per day while cleaning out. This well opened the first production in the county, causing the drilling of three other tests, one of which offsets a gasser drilled by Walsh and others about 3 miles northwest of Seminole about a year ago. A test drilled between the gasser and the Landreth producer, by the Humble Oil & Refining Co., proved a "duster."

Jones County Prospect

The wildcat test drilling by the Alliance Oil Co. on the Guitar Estate lands 1 mile east of the town of Hawley, in section 44, Block 15, T.&P. Survey, Jones County, is showing for a producer and a pool opener, 3 miles east of the Hawley pool. Bottom of the hole is 1,991 feet, where pipe was set and cemented after the hole filled 1,500 feet with oil. The plug has been drilled and the hole is now being cleaned preparatory to testing, the test, which is sure to make a well, made several heads after the plug was drilled. Spirited lease trading took place immediately following the showing of the oil, which comes from the Hawley pay horizon. Campbell and Reeves No. 1 S. A. Kelley, located in section 9, G. Martinez Survey No. 194, will now be closely watched for developments as it is only a mile north of this new strike and may prove to be part of the newly opened pool.

Frank Oyster of Abilene, and others, are preparing to sink a 2,500-foot test on the Tina Bumpass lands, Allen Jones Survey No. 265, between the Noodle Creek and Hawley fields in Jones County, and are moving in materials. It will be about 6 miles west of the Hawley field.

A King sand test will spud this week in the eastern part of Jones County. Same is to be located a mile west of the test now drilling around 1,600 feet, the new location to be in section 7, F. M. Smith Survey No. 3.

Wildcat for Andrews

B. H. Blakeney and others have spudded a wildcat test on the Logsdon lands, in section 5, Block A-32, P.S.L. Survey, in the northwest part of Andrews County. It is near the center of a block of 4,500 acres, which in turn is about 14 miles northwest of the Deep Rock pool. The Empire Gas & Fuel Co. has a half interest in the drilling tract and holds other leases in the area.

Moore Brothers of San Angelo have staked location for a wildcat in Subdivision 25, in the southeast corner of the Throckmorton County School Lands Survey, Upton County. This location is 5½ miles southwest of the second deepest test ever drilled in West Texas, which went to 11,445 feet and was abandoned.

Four wildcats or semiwildcats are to be drilled on the Clarence Scharbauer ranch, between the Goldsmith field on the southeast and the Cummins pool to the northwest in Ector County. Locations have already been made. Humble Oil & Refining Co. is drilling one in the SW quarter of section 30, Black 44; the Texas Pacific Coal & Oil Co. one in the NE cor. section 31, Block 44, and the Shasta Oil Co. and Cordova Union Oil Co. will drill in the NW quarter of Section 29, Block 44, Township 1n, T.&P. Survey. The American Maracaibo has staked location in the SW cor. section 19, 1 mile east of the nearest producer in the Cummins area.

A new test is being drilled about 3 miles southeast of the Yates field in an old area in which a couple of small producers were drilled, but pro-

USED SUCCESSFULLY IN THE RODESSA FIELD—See Page 26

duced only a short time. The new test is in section 55, Block 1, I.&G.N. Survey, Pecos County. Acid may make a vast difference in the completion of this well if there are sufficient showings of oil to warrant acidizing.

Ranger and Wichita Falls Districts

Melat & Graham No. 1-B Munger, a lease farmed out by Gulf Oil Corp. to this firm, in Wichita County, is a good well in the new deep pay for the old KMA pool. This well topped a lime pay at 3,774-3,829 feet, striking an increase in oil at 3,829-63 feet, and flowed 226 bbls. through casing the first 12 hours. An allowable of 58 bbls. per day has been allotted the well, which is producing from the Strawn sand.

Helmerich & Payne, Inc., No. 1 M. K. Graham lands, in B.B.B.&C. Survey, No. 36, Young County, 5 miles west of production in the Bryson pool in Jack County, and 2 miles southwest of the Manley and Rubenkoenig production in Young County, has come in for a 200-bbl. well from sand logged at 3,615-31 feet, opening up an extension or new pool and paving the way for more drilling in this area where deep drilling has been in progress for the past 18 months.

At. T. Strong and associates have made location for a wildcat 2 miles north of the Rathke Oil Co. production in Young County. Location is on the L. L. Davidson farm in the R. C. Eddleman Survey. It is to be drilled with cable tools to 4,100 feet.

Another Hamilton Wildcat

The Seaboard Oil Corp. is to sink its third test in Hamilton County, the first two, about 12 miles northwest of the town of Hamilton, producing gas but no oil, although they were drilled to the Ellenburger. The new test is to be located on a 15,000-acre block near Fairy, and on fee lands in the A. C. Grimes Survey. The company just abandoned a deep test between Dublin and Stephenville in Erath County.

John Kynaston of Washington, D. C., and Charles O. McCue are drilling a wildcat on the W. H. Hale lands 3 miles north of the Portwood pool in the southeastern part of Baylor County. J. F. Schleuter worked the geology in the area. The test will be drilled by rotary in the southeast corner of section 2474.

W. K. Gordon is reported as preparing to drill a 4,500-foot test on a block of 5,000 acres north of Strawn in Palo Pinto County, in quest of Ellenburger production. Contract has been let to Scott Stevenson for the drilling.

R. B. Harris of Fort Worth and associates are preparing to sink a 3,600-foot test on the Lynch lands, in the R. J. Austin Survey, on a block of 4,200 acres in Cooke County. Production will mainly be expected in the Anderson-Kerr pay found in the pool just east of Gainesville around 2,000 feet, but there is a small producer on the B. W. Davis lands, a short distance to the north, which is producing from around 3,500 feet, and if the shallower sand is not found, the test will seek production deeper.

WEST TEXAS COMPLETIONS

Andrews County

Fuhrman Petroleum Corp. No. 4 Ford, 4,488 feet, acidized and shot, 862 bbls. Humble Oil & Refining Co. No. 10 Means, 4,525 feet, acidized, 814 bbls.

Ector County

York & Harper No. 1 Witcher, total depth 4,406 feet, plugged back to 4,212 feet, shot, 495 bbls. Alma Oil Co. No. 1-A T.X.L. (Kloh), 4,210 feet, shot, 303 bbls.

Fisher County

Wourland Oil Co. No. 1 C. C. Wourland, dry and abandoned 3,440 feet, elevation 2,128 feet.

Howard County

McLaughlin No. 2 Chalk, 2,655-3,075 feet, 5 bbls. per hour for 15 hours. Continental Oil Co. No. 13 Overton, 2,405-49 feet, 1,030 bbls.; No. 13-S Settles, 1,273-1,315 feet, 545 bbls.

Jones County

Condor Petroleum Corp. No. 10 Sayles, 1,900-12 feet, 373 bbls.

Pecos County

Worth Drilling Co. No. 2 Brandenburg, 2,187-2,341 feet, shot, 250 bbls.

Upton County

Hightower Oil & Refining Co. No. 2 Burleson, 2,097 2,207 feet, acidized, 190 bbls. Continental Oil Co. No. 2 Reese, 2,356-86 feet, acidized, 446 bbls. International Petroleum Corp. No. 6 Lane, 2,176-2,226 feet, acidized, 508 bbls.

Ward County

Skelly Oil Co. No. 1 Hathaway, 2,569 feet, shot, 2,396 bbls. A. E. Lynch No. 1 Lee, 2,266-2,400 feet, shot, 306 bbls. Humble Oil & Refining Co. No. 8 Richter, 2,906-40 feet, shot, 1,780 bbls.; No. 4-F University, 2,540-2,755 feet, shot, 931 bbls. F.H.E. and Atlantic No. 4 Killough, 2,250-2,380 feet, shot, 535 bbls. Empire Gas & Fuel Co. No. 9 McDonald, 2,247-2,495 feet, shot, 725 bbls. Gulf Oil Corp. No. 4 O'Brien, 2,773 feet, 1,452 bbls.; No. 53 Hutchins, 3,105 feet, shot, 273 bbls. W. E. Hausel No. 2 Bray, temporarily abandoned 2,600 feet.

Winkler County

Monday Oil Co. No. 4 Central State Bank of Abilene, 2,840-2,980 feet, shot, 800 bbls. Illinois Oil Co. No. 3-A McCutcheon, 2,830-3,000 feet, shot, 1,224 bbls. Southland Oil Co. No. 1 Clapp, 2,766-2,952 feet, shot, 1,010 bbls. Mid-Continent Petroleum Corp. No. 6 Walton, 2,950 feet, shot, 1,354 bbls. Skelly Oil Co., No. 2 Colby, 2,780-2,975 feet, shot, 896 bbls. Henderson No. 1 Daugherty, 3,098 feet, acidized, 1,480 bbls. Atlantic Refining Co. No. 4-A Lack, 3,020-85 feet, shot, 1,637 bbls. Magnolia Petroleum Co. No. 33 Walton, 2,926 feet, 615 bbls.

WEST CENTRAL TEXAS COMPLETIONS

Brown County

Cunningham No. 2 Armstrong, 1,417-31 feet, shot, 50 bbls. Gunn Production Co. No. 7 Dickens, 1,426-29 feet, 10 bbls. L. L. Shead and others No. 1 Hickman, dry and abandoned, 1,311 feet.

Callahan County

I. G. Abney No. 1 Blank, 1,257 feet, 1,185,000 feet of gas. R. Carnes No. 1-A Finley, 600 feet,

(Continued on Page 182)

THE NEW . . . .

McKISSICK

TUBING CATCHER

WITH POSITIVE ANCHOR ATTACHMENT

SAFE

IMPROVED

PROPERLY CONSTRUCTED

The McKissick Tubing Catcher was designed to positively and automatically function under all conditions found in handling tubing in modern deep wells. It was designed with ample clearance of both head and slips, short overall length and ample fluid courses; all essential requirements where gas, paraffin and crooked holes are encountered.

The slips in the McKissick Tubing Catcher are sufficiently large to distribute the shock load over a larger area of casing surface, and the slip rest acts as a fluid protector as well as a guide. The McKissick Tubing Catcher is manufactured and marked for the specific weight of casing in which it is intended to be used.

THE ANCHOR ATTACHMENT

When the anchor attachment is run in conjunction with the new McKissick Tubing Catcher, the tubing may be anchored at any point simply by rotating the tubing one-half turn to the left and released by the reverse motion. Only one part, freely fitted, functions to set the anchor by means of the lifting sleeve which raises the slips to the head; therefore, making a gripping contact to the casing, assuring a positive shift-proof anchor.

For speed and safety in all tubing operations use the new McKissick Tubing Catcher and positive anchor attachment—a dependable combination.

MANUFACTURED BY

McKISSICK PRODUCTS CO.

TULSA, OKLAHOMA

California Field Report

By
L. P. STOCKMAN

FUTURE OUTLOOK IMPROVED BY BIG FOREIGN SHIPMENTS

LOS ANGELES, Calif., Oct. 12.—If the ship charter market is any criterion, conditions in California will be greatly benefited during the next few months because indications point to the probability that approximately 12,000,000 bbls. of crude and refined oils will be exported from California to Pacific and Atlantic foreign ports during the last quarter of the year. This will greatly alleviate the stock situation as buyers will therefore not be obliged to store as much oil as preliminary estimates have indicated. This export movement will include aviation gasoline for Vladivostok, crude, fuel oil and diesel to Japan, gasoline to Australia and light oils to China in addition to regular movements of crude and refined oil to British Columbia, South America and gasoline to Hamburg, Germany. Intercoastal movements to the Atlantic seaboard for domestic consumption have been holding up rather steady and will probably be maintained at the present rate in as much as several spot cargoes of diesel, gas oil or kerosene distillate will probably be picked up late in the year.

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	Sept. 27		Sept. 20			
Intercoastal-domestic:	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Diesel and gas oil	.....	.....	.....	.....	151,541	527,098
Gasoline	163,516	23,359	.....	.....	5,061,041	5,855,709
Kerosene	.....	.....	79,455	11,351	968,157	753,457
Foreign exports:						
Crude oil	109,381	15,626	105,284	15,041	7,219,787	9,921,529
Fuel oil	167,871	23,982	493,398	70,485	7,921,613	9,112,939
Diesel and gas oil	19,694	2,813	14,134	2,019	4,241,847	3,429,999
Gasoline	146,525	20,932	337,329	48,190	5,638,095	5,014,246
Kerosene	50,720	7,246	58,057	8,294	1,197,058	956,477
Other unfinished oil	.....	.....	.....	.....	132,908	99,847
Coastwise-domestic:						
Crude oil	195,592	27,942	128,746	18,392	5,056,050	4,740,022
Fuel oil	168,412	24,059	461,484	65,926	7,714,822	7,442,486
Diesel and gas oil	9,634	1,376	.....	.....	877,592	687,140
Gasoline	281,796	40,257	143,952	20,565	9,555,097	8,555,041
Kerosene	.....	.....	.....	.....	138,814	146,339

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic:						
Diesel and gas oil	.....	.....	.....	.....	.....	158,152
Gasoline	.....	.....	.....	.....	227,419	.....
Kerosene	.....	.....	.....	.....	.....	149,715
Asphalt	.....	.....	.....	.....	267,431	420,414
Lubricants	5,412	773	.....	.....	43,543	57,325
Foreign exports:						
Crude oil	31,569	4,510	.....	.....	2,357,035	1,893,252
Fuel oil	52,700	7,529	63,455	9,065	2,107,097	1,693,780
Diesel and gas oil	46,011	6,573	16,330	2,333	1,444,652	855,891
Gasoline	70,505	10,072	.....	.....	2,830,830	2,278,134
Kerosene	.....	.....	.....	.....	546,419	627,396
Lubricants	.....	.....	.....	.....	268,440	173,507
Other unfinished oil	.....	.....	.....	.....	90,923	.....
Coastwise-domestic:						
Fuel oil	268,362	38,337	189,008	27,001	5,203,110	5,283,848
Diesel and gas oil	.....	.....	.....	.....	515,382	175,932
Gasoline	117,618	16,803	43,961	6,280	3,803,983	3,262,347
Kerosene	16,427	2,348	.....	.....	158,017	76,785

The parade of tankers in the export trade started a few days ago when two Norwegian motor tankers, Garronne and Ferm, lifted cargoes for the Far East. The former lifted 85,000 bbls. of aviation gasoline at Union Oil Co.'s marine terminal destined for Nagaevo Bay terminal at Vladivostok, from whence it will be transported to inland Siberian aviation bases. General Petroleum has chartered the new Dutch tanker Loosdrecht for two trans-Pacific trips. This tanker has just left Los Angeles harbor with a cargo of gasoline for Nagasaki, Japan, and upon return to California will lift a cargo of gasoline and kerosene to Australia. The Mitsui interests of Japan recently signed a one-year contract with the United Molasses Co. which provides that the tankers of the latter will transport crude and fuel oil from Los Angeles harbor and Estero Bay to Japan. The first two ships will lift their initial loads under this contract before the close of October. All United Molasses Co.'s tankers are of British registry and carry the prefix Athel, which makes the tankers King and Queen the Athelking and Athelqueen.

Gas Well

Standard Oil Co. has completed its third gas well in the McDonald Island gas field, in the San Joaquin River delta southwest of Stockton, San Joaquin County. No. 1 Mabry Community, in section 31-2-5, was brought in flowing 26,144,000 feet of gas per day from 5,312 feet. This well was finished with an 8⅝-inch water string landed at 5,285 feet and 5,279 feet of 2½-inch tubing. The well was shut in due to lack of pipeline facilities. Standard's initial completion, in section 25-2-4, showed an initial production of 18,000,000 feet; its No. 1 Weyl-Zuckerman 24,708,000 feet.

In the Rio Vista gas field of Solano County, Amerada Petroleum Corp. is rotating ahead in No. 1 Happe in a hard sandy shale at 6,770 feet, and Standard Oil Co. is drilling No. 1 Neal Anderson in section 27-4-2 at 4,786 feet.

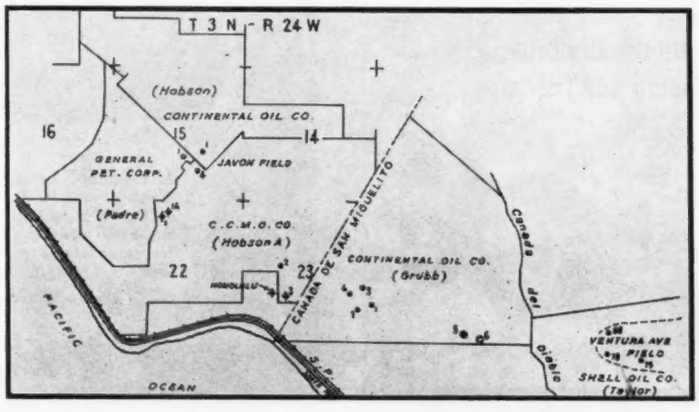
Kettleman Hills

In the Kettleman North Dome field Standard Oil Co. completed No. 61-19-J, section 19-21-7, Fresno County. It flowed 1,645 bbls. of clean 32.3 gravity oil and 2,070,000 feet of gas per day. A 7-inch water string was cemented at 8,660 feet, total depth 8,890 feet. Kettleman North Dome Association (Kenda) is fishing for a string of 4¾-inch casing in No. 47-2-P in section 2-22-17 preparatory to deepening. Standard Oil Co. is fishing for drill pipe in No. 32-19-J, the top of which is at 8,635 feet, and for another string in No. 72-19-J, the top of the fish being at 8,220 feet. Kenda is fishing for a string of drill pipe in No. 21-30-J with the top of the pipe at 8,004 feet. Several new wells are being started, including Nos. 87-13-H and 4-19-J of the Standard and Nos. 81-32-J and 25-20-J of Kenda.

Million-Dollar Wildcat

Recent abandonment of No. 1 Lillis-Welsh by the Union Oil Co. in the Kettleman North Dome field brought to a close a concerted attempt to develop commercial production in this wildcat, located in the extreme western end of the structure in section 24-21-16. A conservative estimate indicates that approximately $1,000,000 was expended in the drilling of No. 1 Lillis-Welsh, which was carried down to 11,127 feet before abandonment. This outpost was originally started by Ed McAdams with the assistance of some dry hole money but was later turned over to the Union Oil Co. when he failed to secure production and no more dry hole money was forthcoming. The North Kettleman Oil & Gas Co. had the misfortune to have a shot go off prematurely high up in the hole and with the explosion went the company's hope of developing commercial production. No. 1 Willis-Welsh looked unusually promising before the premature explosion, but the resulting mechanical trouble could never be corrected and consequently the importance of the showings originally found must remain conjectural. Union Oil Co. bailed approximately 150 bbls. of oil out of the hole when testing showings on its way out but failed to find the gas logged by the North Kettleman Oil & Gas Co.

Kettleman Middle Dome field has not proved as productive as originally anticipated and, based on development work undertaken up to date, engineers rate it as of secondary importance. Three commercial producers, two by Petroleum Securities and one by Standard Oil Co., have been finished and Standard is rotating ahead in another possible potential producer in section 19-23-19. This well, No. 46-19-V, has just passed the 6,350-foot level but it should be another 60 days before it will be ready for a production test, as considerable difficulty is being experienced with the high head-water zone characteristic of this area. Standard is using 106-pound mud to keep this water under control. Petroleum Securities expended approximately $1,200,000 in the drilling of No. 1 Burbank in the Kettleman Middle Dome field, but was unable to finish it as a commercial producer because of a mechanical problem, although, in accordance with provisions of the Kettleman Middle Dome Association, Petroleum Securities is entitled to reimbursement for total expenditures before its wells become the property of the operating unit.



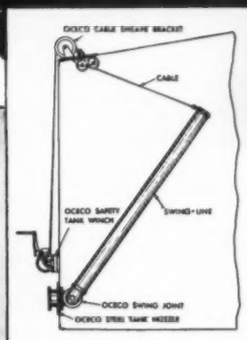
The Ventura Avenue and San Miguelito fields are getting so close together that some question has arisen as to whether this is one field or two. Continental No. 5 Grubb at San Miguelito is about 1 mile west of Shell No. 78 Taylor at Ventura Avenue

Coastal Area

The coastal district, comprising Ventura, Santa Barbara and San Luis Obispo counties, has attracted the attention of numerous prospectors and the success of Union Oil Co. several months ago in discovering an oil field near Santa Maria will stimulate additional exploration work. Amil Anderson is rigging up rotary drilling equipment for a test in the

OCECO Swing Lines

MEET THE REQUIREMENTS OF PRACTICAL OPERATION

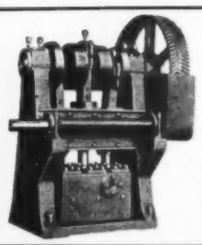


• Oceco swing line equipment consists of a steel nozzle, a heavy duty swing joint that will not twist or leak, a gas-tight stuffing box and cable sheave mounted on the tank top, and winch—all of Oceco's serviceable design and dependable manufacture. Winches are worm geared and self-locking. Oceco swing lines meet any tank requirement. Write for descriptive literature.

• Specify OCECO FITTINGS your tanks deserve the best •

OCECO Fittings

THE JOHNSTON & JENNINGS CO.
OCECO DIVISION
884 Addison Road • Cleveland, Ohio
Engineering and Sales Services: NEW YORK • CHICAGO • PITTSBURGH
BEAUMONT, TEXAS • TULSA, OKLAHOMA • LOS ANGELES • OAKLAND, CALIF.



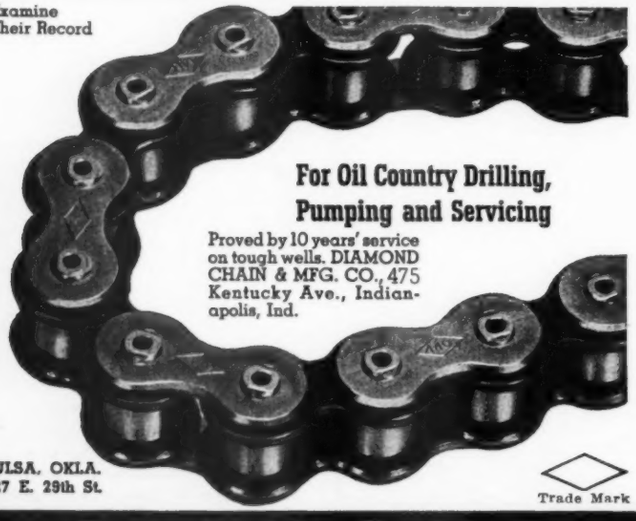
ALDRICH

WATER FLOODING PUMPS

Are giving continuously satisfactory service in the Pennsylvania and New York Fields.
Porcelain Plungers increase their efficiency.

THE ALDRICH PUMP CO., Allentown, Pa.

Examine Their Record



For Oil Country Drilling, Pumping and Servicing

Proved by 10 years' service on tough wells. DIAMOND CHAIN & MFG. CO., 475 Kentucky Ave., Indianapolis, Ind.

TULSA, OKLA.
227 E. 29th St.

Trade Mark

DIAMOND ROLLER CHAIN

PERFECTLY MATCHED THREADS

In ordinary language, perfectly matched threads mean perfect joints. Perfect threads can be cut only with a tool minutely accurate, such as this company uses in producing thread perfection for many of the most exacting engineers in the land.

Write to the factory at Wheeling.

WHEELING MACHINE PRODUCTS COMPANY
WHEELING, W. VA.

Cholame North dome in SE cor. SW section 15-24-14 in Monterey County. Jack Juhl is the superintendent on the job. In order to reach the well site, Anderson found it necessary to build 4½ miles of mountain road. In the Cholame Middle dome, the Cholame Syndicate has taken over No. 1 Jack in the SW cor. SE section 10-25-15 in San Luis Obispo County and is redrilling at 3,394 feet. This wildcat showed some indications of oil and gas a few years ago but mechanical trouble which developed at 3,687 feet prevented a satisfactory test. L. R. (Doc) Knowlton is in charge of the work. Between Pismo Beach and San Luis Obispo, J. D. Martin is drilling two new wells in section 5-32-13 and both are making hole below 3,000 feet. Nos. 1 and 2 on this property, in San Luis Obispo County, are pumping 140 bbls. and 70 bbls. per day respectively. The oil is relatively clean, cutting less than 3 per cent, and current production is being purchased by the Union Oil Co.

A. T. Jergins Trust is abandoning No. 1 Roderigues in section 5-32-13 as a duster at 3,654 feet and Birch-Royer Oil Co. is abandoning No. 1 Patchett in section 33-31-13 as unproductive at 2,357 feet. In the extreme eastern part of San Luis Obispo County, Barnsdall Oil Co. has suspended drilling on No. 1 Wreden in section 24-28-17 at 5,087 feet, but R. A. Foster is still rotating ahead in No. 2 McKee in section 2-32-22 at 4,990 feet and United Oil Co. is making normal footage in No. 1 Panorama in section 2-32-21 at 1,820 feet. In the Huasna district of San Luis Obispo County, Union Oil Co. is drilling ahead on an interesting wildcat, No. 1 Porter in section 22-32-15, and the bit is at the present time approaching the 1,450-foot level.

Shell Oil Co. completed an excellent well in the Ventura Avenue field when No. 28 Edison was brought in flowing 705 bbls. of clean 29.4 gravity oil and 736,000 feet of gas per day. The well was bottomed at 6,730 feet and finished with an 8⅝-inch water string landed at 6,629 feet and a 4¾-inch liner carrying 101 feet of perforated. In the Elwood field of Santa Barbara County, Barnsdall-Rio Grande recompleted No. 1 Luton-Bell after redrilling and deepening the hole from the Vaqueros to the Sespe. The well was returned to production doing 138 bbls. of 35.7 gravity oil and 440,000 feet of gas per day on a compressor from 3,604 feet. Top of the Sespe rocks was logged at 3,495 feet and the hole was finished with a 6⅝-inch combination string carrying 64 feet of perforated and cemented through perforations at 3,534 feet. No. 1 Luton-Bell was the discovery well of the field. Union Oil Co. is expected to complete a new well in the Santa Maria Valley field within the next few days as No. 2 Battles, in section 24-10-34, hit the basement, Franciscan Schist, at 2,747 feet and a combination string including 680 feet of 120-mesh screen was landed at 2,732 feet and cemented through perforations at 2,048 feet.

Midway-Sunset

Three new wells were finished in the Midway-Sunset field of Kern County although one of them was only good for 105 bbls. of 14.5 gravity oil cutting 30 per cent. This well, Hugh B. Evans No. 11 in section 35-32-23 was bottomed at 2,330 feet and brought in on the beam. Carl Zamloch No. 1 in section 22-32-23 showed an initial production of 490 bbls. of clean 17.3 gravity oil from 2,135 feet. Production of this well is expected to register a substantial increase as it has 690 feet of penetration from which to draw. Standard Oil Co. No 20-33-D in section 33-32-24 was completed pumping 398 bbls. of clean 22.8 gravity oil per day from 3,173 feet after the hole had been finished with a 7-inch liner carrying 128 feet of perforated. Union Oil Co. is starting two new wells in this field and both should begin making hole within the next few days. One of these wells will be located on the Keene property upon which the company recently finished an excellent producer and the other will be located on the Midway Northern property which the company has owned in fee for several years.

In the Edison field of Kern County A. T. Jergins Trust completed No. 23-5 Texas fee in section 23-30-29. Its initial production was 40 bbls. of 15.1 gravity oil from 1,995 feet, plugged

SINCLAIR-"RED" GRANGE FOOTBALL CONTEST

Scoring for Sinclair Distributors, Jobbers and Dealers

Every week, hundreds of thousands of gridiron fans are entering the Sinclair-"Red" Grange Football Radio Contest, bringing wide opportunity for increased profit to Sinclair distributors, jobbers and dealers.

Why don't you let this contest score new profit for you, too? There is still time. 'Phone the local Sinclair office or write to Sinclair Refining Company (Inc.), 630 Fifth Avenue, New York, N. Y.

A NEW CAR
AND 120 OTHER PRIZES GIVEN AWAY WEEKLY

back from 2,443 feet. No. 3 Gerrard of the Wood-Callahan Oil Co. was good for 36 bbls. of relatively clean 14.6 gravity oil upon completion at 2,097 feet, plugged back from 2,171 feet because of bottom water. Out in the Kern Front section of the old Kern River field Italo Petroleum Co. No. 33 Cauley, in section 16-28-27, was finished pumping 151 bbls. of clean pipe line oil per day from 2,905 feet. Two small wells were recently completed in the Mountain View field of Kern County although one, Hogan Petroleum Co. No. 5 Foster, in section 32-30-29, may show improved production if and when the water problem can be corrected. This new well was brought in pumping 118 bbls. of 28.5 gravity oil cutting 22 per cent upon completion at 6,159 feet. Standard Oil Co. No. 2 Warren, in section 13-30-28, was good for 124 bbls. of relatively clean 22.7 gravity oil daily from 5,102 feet.

Playa Del Rey

Union Oil Co. completed No. 14 Del Rey in the Playa Del Rey field of Los Angeles Basin and preparations are already under way to begin drilling operations on another potential producer. Union's new well was brought in pumping 410 bbls. of relatively clean 22.3 gravity oil daily from 6,069 feet. The company spudded in No. 17 Vidor and has rig material on ground for No. 15 Del Rey. In the Montebello field St. Helens Petroleum Co. completed No. 20 Monterey good for 49 bbls. of 23.7 gravity oil which showed a cut of 23 per cent. This new producer was bottomed at 3,710 feet and should be followed into production by No. 19 provided the water trouble can be overcome. Standard's No. 87 Baldwin was completed pumping 118 bbls. of 23.1 gravity oil daily from 2,821 feet, but the output was still at last reports showing a cut of 25 per cent. In the Torrance field, M. W. Petroleum Co. No. 1 Redondo, finished at 3,582 feet, was brought in pumping 128 bbls. of 17.3 gravity oil per day. Shell No. 1 Kranz, an outpost, was completed pumping 81 bbls. per day from 3,720 feet, but the company found it necessary to go into the hole again a day or so ago due to sand trouble.

In the Wilmington district of Los Angeles harbor, Bankline Oil Co. has completed its No. 1 Community in section 34-4-13 and it was brought in pumping 160 bbls. of 17.2 gravity oil per day from 3,510 feet after the hole had plugged back from 4,337 feet.

In the Padre Canyon field of Ventura County, Chanslor Canfield Midway Oil Co. recompleted No. 4-A Hobson doing 168 bbls. per day on a compressor from 5,931 feet. This well failed to come up to expectations and its failure to do so is believed due to faulting as no other condition could account for its dismal showing as compared with Continental Oil Co. discovery well. The Padre Canyon field was formerly known as Javon field but the official designation was recently changed due to difficulty in pronunciation. In the East Coyote field of Los Angeles Basin, Continental Oil Co. has completed No. 2 Carlton flowing 100 bbls. of oil per day by heads from 2,725 feet after the hole had been plugged back from 2,751 feet. This well may be put on the beam within another 10 days as it does not have sufficient kick to result in a natural flow. In the Santa Fe Springs field, Pedro Petroleum Co. has recompleted No. 1 Fulton pumping 101 bbls. of very clean 34.1 gravity oil per day after redrilling and cleaning out the hole to bottom 4,512 feet.

Central West Fields

(Continued from Page 140)

willing to cooperate in very way with operators, no violations of the Indiana oil and gas regulations will be tolerated in the future."

In Daviess County, section 8, Barr Township, Morbald Development Co. No. 1 George O'Brien was completed at 633½ feet and is a commercial gas well. In section 3, Kentucky Natural Gas Corp. is drilling on the Etta B. Loyd property. E. R. Parker No. 1 J. and E. Smith, in section 27, is down 600 feet. In section 17, Oliphant & Sage No. 1 John Wagler is down 539 feet. In Harrison Township, section 3, Ben Ruble & Co. is drilling on the A. and D. Himsel lease.

Premium Finance Co. No. 1, Willie Huey, in section 22, Logan Township, Pike County, was drilled to a total depth of 988 feet and produced 4 bbls. the first 24 hours after a shot.

In Knox County, section 23, Busseron Township, Kentucky Natural Gas Corp. No. 1 J. P. Beard & Co., was completed below the sand at 575 feet and is a commercial gas well. O. A. Thayer No. 2 is drilling on the N. A. Hall farm in section 15. In Location 261, Bruce Cloud No. 3 Nellie Walden, with a total depth of 650 feet, was a dry hole. In Perry Township, section 6, Grant & Drake No. 5, Math Gayer, was drilled to a depth of 693 feet without a show of oil or gas and has been abandoned. Haney & Hollingsworth are down 350 feet on the No. 3 Ed Hug in section 7, and down 1,100 feet on the No. 4 William Kress, in section 8. In Clark Township, section 27, Gardner Oil Co. No. 1, M. A. Phillips, with a total depth of 257 feet, was dry. In section 25, Oil Township, McGrain Oil & Gas Corp. is drilling No. 2 John Farley. In section 2, Albert McGrain No. 1, Bert Quinlan, was drilled to a depth of 431 feet without a show of oil or gas and has been abandoned. In section 18, Charles Wyman is drilling on the Ida Poiser farm. In Troy Township, section 21, Lewis Stamp is drilling on the J. and E. Boerste property.

McGREGOR

12 Different Types of Working Barrels

OUR aim is to satisfy our customers by supplying them with a complete line of equipment for pumping wells. Our line includes:

Brass, Steel and Cast Iron Working Barrels
New "MAC" Plunger Barrel
Working, Standing and Drop Valves
Balls and Seats, etc.

Send for Booklet

McGREGOR WORKING BARREL COMPANY
Bradford, Pa., U.S.A.

THE UNIVERSITY OF NEBRASKA

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario, Oct. 10.—On the west side of the South Turner Valley, Sovereign Royalties No. 1 Myers & Wright, LSD 14, section 21-18-2w5, got the Madison limestone contact at 5,790 feet and is deepening in the lime to cement 6-inch casing around 5,815 feet. Considerable gas and oil were encountered at the contact. The lime was encountered somewhat higher than expected, indicating the likelihood of a naphtha producer rather than a crude oil well in the lime.

West of the older section of South Turner Valley, Sterling Pacific No. 3, LSD 13, section 33-18-2w5, is preparing to deepen after cementing at 5,506 feet. It is expected to get the lime around 5,900 feet. Sterling Pacific No. 4, LSD 4, same section, is below 3,035 feet.

In section 28-18-2w5, B. & B. Co. No. 1, LSD 12, offsetting Turner Valley Royalties No. 1 producer to the south, is below 2,700 feet. Renfrew Royalties No. 1 Morris & Goodfellow, LSD 3, same section, is drilling more than 190 feet in the limestone at 6,195 feet with between 600 and 650 pounds back pressure. Some small shows of gas have been met in the lime.

British Dominion Oil & Development Corp. No. 4, LSD 6, same section, bottoming in the lime at 6,423 feet will be shot with 600 quarts. It has been making between 75 and 100 bbls. a day naphtha recovery, but it is thought a shot may bring in crude oil production.

In section 21-18-2w5, Foundation Royalties No. 1, LSD 5, is in the Fernie shales below 5,880 feet and expected to get the limestone around 6,000 feet. It contacted the brown sands of the Dalhousie formation at 5,800 feet with strong saturation of crude. West Side Royalties No. 1 (formerly Highwood Royalties) has resumed with rotary tools from 2,477 feet.

Central Royalties No. 1 (formerly Sunburst-Mid Royal) LSD 14, section 28-18-2w5, is cleaning out to resume from about 1,600 feet. It has been standing idle for several years. Location is close to Century Royalties No. 1 in the same LSD, which is the largest naphtha producer in the south field.

South Turner Valley

In the older field, W. A. Preston and associates No. 1 Rand, S half LSD 5, section 34-18-2w5, is below 3,800 feet. Farther south, shooting of Union-Freehold Oil Corp. No. 1, LSD 8, section 21-18-2w5, in the lime at 6,462 feet failed to increase the naphtha recovery which was under 30 bbls. a day.

To Test Okalta Acreage

Acreage of Okalta Oils, Ltd., of Calgary, in sections 16-18-2w5 and 20-18-2w5, will be tested as a result of agreements recently concluded with two other companies. Anglo-Canadian Development & Holding Co., of Calgary, headed by W. G. Egbert, will drill LSD 16, section 20-18-2w5, and has taken an option on LSD 9, same section. This company has also taken a lease on LSD 13 and option on LSD 11 in section 16-18-2w5.

An eastern Canada syndicate has a lease on LSD 1 and an option on LSD 8 in section 20; and has leased LSD 14 and optioned LSD 12 in section 16.

In addition to these four tests, a fifth well will be drilled by the Okalta company under a royalty arrangement. Section 16-18-2w5 is immediately south of section 21-18-2w5, and section 20-18-2w5 is immediately west. The acreage to be tested is all on the west flank of the structure.

To Deepen Old Producer

In the Mercury section of South Turner Valley, O. B. Stockford is arranging for deepening of Hylo Oils No. 1, N half LSD 12, section 4-19-2w5, completed several years ago with strong shows of crude in the Home sand and a large naphtha production from the top of the Madison limestone. The production has been dropping off, and the well will be deepened in the lime to restore production. No. 2, on the same acreage, will test the Home sand, where a potential initial crude production of 300 bbls. a day is anticipated.

Deep Lime Rights Sold

Shareholders of Freehold Oil Corp. of Calgary have approved the sale of the company's 35¾ per cent interest in Mar Jon-Freehold No. 1 producer to Royalite Oil Co. in return for 1,850 shares of Royalite stock. The Royalite Oil Co. already owned a 35¾ per cent interest.

Tests in Foothills

In the Forest Reserve area west of Olds, Hunter Valley Oil Co. No. 1 McLaren, LSD 12, section 13-31-10w5, is deepening below 6,145 feet with continued small shows of oil and gas.

On the Birch Ridge structure, farther south and east, Elbow Oils No. 1, LSD 11, section 35-22-5w5, is below 4,640 feet after cementing against quicksand. On the Moose dome, Moose Oils No. 2, LSD 8, section 29-22-6w5, is below 695 feet with considerable gas coming up through the fluid.

On the Watson structure north and west of Lundbreck, Mar Jon Oil Co. No. 3, LSD 3, section 4-10-2w5, has drilled through 80 feet of an unidentified plastic formation and is preparing to resume after cementing casing at 5,190 feet. Several small oil shows have been met and there is a strong gas flow.

High River—Aldersyde

In the High River-Aldersyde area, east of Turner Valley, Area Development Corp. No. 1, NW section 24-18-1w5, is below 6,714 feet and should reach its original objective of 7,000 feet by the middle of October. It has logged a little deeper than anticipated, and may ultimately go to 8,000 feet or more.

On the New Valley structure, McLeod Oil Co. No. 1, LSD 4, section 6-21-2w5, is below 6,160 feet after running casing to 6,159 feet.

Border Fields

On the Del Bonita structure south of Lethbridge, Sunshine Oils No. 1, LSD 10, section 19-1-21w4, is standing at 4,822 feet after cementing casing in the upper Sunburst sand, where a core showed evidence of oil saturation and considerable gas. Madison lime is expected around 5,100 feet.

In the Taber area, Plains Petroleum No. 1, LSD 13-14, section 29-9-17w4, is below 800 feet and will set casing in the Milk River sand this week. The Sunburst sand is expected at 3,290 feet. The Plains Petroleum Corp., Ltd., headed by Robert I. Ciancey of Toronto is drilling the test in association with Pennsylvania and Ohio interests and holds 5,120 acres on the Majestic structure about 40 miles east of Lethbridge and northwest of the Cut Bank and Sunburst fields.

To Drill on Boundary

W. C. Fisher, president of Model Oils, Ltd., of Calgary is arranging with Jack Reynolds and associates for a test on holdings recently secured by the Reynolds interests on both sides of the International boundary. Mr. Reynolds' investigations indicate the existence of an anticline carrying through from the Bow Island area of southern Alberta into Montana, the structure rising from the Alberta plains and reaching its high a short distance north of the Alberta-Montana boundary. Tentative location has been made on the Montana side close to the boundary in section 5-37-3e.

John I. McFarland of Calgary has filed on 6,011 acres some 25 miles northeast of Brooks, Alberta, and is arranging for development.

British Columbia

In the Flathead Valley, southeastern British Columbia, Columbia Oils No. 1 is below 5,111 feet with continued shows of oil and gas.

Saskatchewan Operations

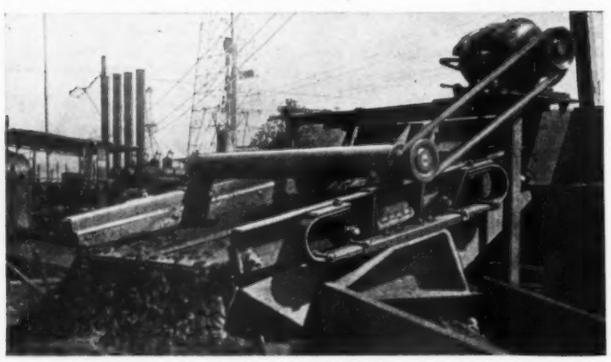
In the town of North Battleford, Saskatchewan, North Battleford Syndicate No. 1 is below 1,525 feet after getting two small shows of gas.

In southwestern Saskatchewan, Twin Provinces Oil & Gas Co. No. 1, section 21-11-29w3, is preparing to resume from 2,200 feet. The test reported fair gas shows around 600 and 1,415 feet and is expected to get the lime at about 3,400 feet.

Ontario Operations

In the Ontario fields, Saroline Oil Co. has been incorporated under Ontario charter with $40,000 capitalization to operate the Englehart oil property in the Petrolia-Enniskillen field. It is planned to drill additional wells in that area.

The Best Way to Recondition
• ROTARY MUD



- It saves mud and keeps it in constantly good condition.
- It saves pump parts from undue wear.
- It simplifies the entire system by reducing the size of slush and reject pits.
- It reduces the hazards of blowouts.
- It reduces gas cutting to a minimum.
- The Link-Belt screen has many exclusive advantages such as —larger screening area—longer life of screen cloth—ease of transportation—minimum head room required, etc.

Send for Folder No. 1672. Address Link-Belt Company, Philadelphia, Los Angeles, New York, Dallas, Houston, or Oklahoma City (W. H. Abele, Box 305, Route 4). 5848

LINK-BELT
VIBRATING SCREEN

North Louisiana, Arkansas

By MITCHELL TUCKER

MOST NEW WORK IN RODESSA ON TEXAS SIDE OF THE FIELD

SHREVEPORT, La., Oct. 12.—Twenty-four new locations in the Rodessa field featured developments in northern Louisiana for the week, five of which were on the Louisiana side and 19 on the Texas side. All but two of these locations were for the further development of proven properties. Two locations will provide western offsets to the present foremost southwestern producers on the Cass County side of the field, situated just north of the Marion County line.

Total Rodessa completions numbered 369 on October 10, with 70 drilling wells and 30 locations, making a total of 469 operations in the field to date. Activity in the Cass County, Texas, side of the field continues to exceed that on the Louisiana side (40 in Texas and 30 in Louisiana), although there are now 299 completions in Louisiana with 70 in Texas.

The Benedum-Trees Oil Co. test on the flank of the old Irma oil field of southern Arkansas gave promise of extending the producing area when 800 feet of 21 gravity oil was indicated on drill stem test.

Panola County, on the East Texas border, claims a new gas and distillate pool this week when A. C. Glassell's No. 1 Frost Industries, Mary Potts Survey, showed definite signs of productivity.

Rodessa Conservation

The temporary gas-oil ratio order which was applied to the Rodessa field on September 15, cutting oil wells to a 12,500 to 1 ratio, and gas-distillate wells to a 25,000 to 1 ratio, has resulted in large decrease in gas wastage. From a previously estimated waste of 600,000,000 feet daily, the waste today is estimated at 250,000,000 to 300,000,000 feet. This situation will be further improved when the United Gas Public Service Co. places its vast gathering, compressing and absorption gasoline plant system into operation, which will be within the next 60 days. The Caltexo Gasoline Co.'s plant at Rodessa will begin the manufacture of natural gasoline this week with a daily capacity of 50,000,000 feet, processing gas from the Standard Oil of Louisiana's properties.

From 25 to 35 per cent of the wells in the field cannot make their allowable, and there were numerous instances of additional wells falling within this classification after the application of the new ratio order. One company is reported to have lost 600 bbls. daily production through the cutback in gas withdrawals.

Certain major operators are reconditioning their high gas-oil ratio wells by the setting of short strings of 5-inch casing at points below the gas-oil contact to reduce the excessive ratios. Standard Oil of Louisiana recently completed reworking their No. 3 Lawton, bringing the ratio to about one-half its former size, without materially affecting the potential flow, and not harming the well's ability to make its daily allowable.

Deeper Horizons Indicated

Magnolia Petroleum Co. completed a test of deeper horizons at Rodessa after drilling No. 3 N. S. Spearman, NW SW section 18-23-15, to 6,475 feet, or about 475 feet lower than the base of the Young sand, lowermost producing zone today. Just above the 6,475-foot level several feet of sand, carrying some saturation of heavy oil, was cored. This horizon corresponds to the Pettitt sand, productive of gas in the Sligo gas field (lowest member of the Lower Glen Rose and just topping the Travis Peak). Apparently obtaining the geological information desired, Magnolia plugged this well back to a total depth of 6,018 feet and completed it as a producer in the Rodessa producing zones. This is the second well which has been carried to this Pettitt sand at Rodessa (the other by R. W. Norton several months ago) and each found the same indication of saturation.

Rodessa Completions

Rodessa completions in the past week were as follows:

Magnolia Petroleum Co. No. 6 Tyson, NE cor. section 13-23-16, flowing initial of 10 bbls. per hour through three-sixteenths inch tubing choke, tubing pressure 400 pounds, casing pressure 200 pounds, saturation topped at 6,013 feet, total depth 6,036 feet.

Magnolia Petroleum Co. No. 3 N. S. Spearman, NW SW section 18-23-15, flowed 8 bbls. per hour through one-eighth inch tubing choke, tubing pressure 560 pounds, casing pressure 500 pounds, total depth 6,018 feet, plugged back from 6,475 feet.

Red Iron Drilling Co. No. 1 Means, foremost northeastern outpost well, section 9-23-15, gas-distillate producer, flowing 10 bbls. of distillate and 15,000,000 feet gas daily through five-eighths inch tubing choke; tubing pressure 1,650 pounds, casing pressure 900 pounds, total depth 6,005 feet.

Snowden & Anding No. 2 Taylor, Lot 7, Block 46, Rodessa townsite, section 23-23-16, flowed 6 bbls. distillate per hour with 5,000,000 feet of gas, through 20/64-inch tubing choke, after 3,000-gallon acid charge, tubing pressure 1,450 pounds, casing pressure 1,550 pounds, total depth 5,955 feet.

United Gas No. 4 W. B. Spearman, NE SW section 22-23-16, flowed 16 bbls. per hour initially through three-eighths inch tubing choke, tubing pressure 125 pounds, casing pressure 325 pounds, saturation topped 5,937 feet, 7-inch casing set at 5,985 feet and perforated from 5,940-60 and 5,970-85 feet, total depth 5,985 feet.

Herman L. Brown No. 7 R. P. Willis, Robert Trammel Survey, Cass County, Texas, flowed 500 bbls. in 14 hours through three-quarters inch tubing choke, tubing pressure 250 pounds, casing pressure 750 pounds, saturation topped at 6,032 feet, total depth 6,073 feet.

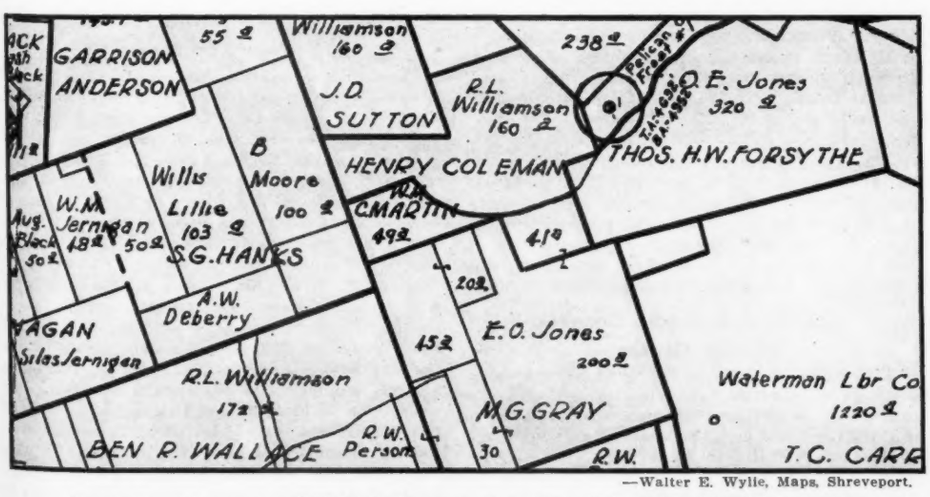
Magnolia Petroleum Co. No. 2 J. E. George, NE cor. John Collum Survey, flowed 32 bbls. per hour through three-eighths inch tubing choke, tubing pressure 300 pounds, casing pressure 700 pounds, saturation topped 6,021 feet, total depth 6,078 feet.

Magnolia Petroleum Co. No. 3 J. E. George, SW corner John Collum Survey, flowed 10 bbls. per hour through one-eighth inch tubing choke, tubing pressure 380 pounds, casing pressure 500 pounds, saturation topped 6,073 feet, total depth 6,129 feet.

Superior Oil Co. No. 6-A Chew, Robert Trammel Survey, flowed 305 bbls. in 24 hours through one-quarter inch tubing choke, tubing pressure 300 pounds, casing pressure 700 pounds, saturation topped 5,938 feet, total depth 5,988 feet.

Tide Water No. 1 C. C. Chew, Robert Trammel Survey, flowed 509 bbls. in 24 hours through one-half inch tubing choke, tubing pressure 740 pounds, casing pressure 900 pounds, saturation topped 5,954 feet, total depth 5,977 feet.

United Production Co. No. 4 J. R. Jones, Ben J. Murray Survey, flowed 57 bbls. per hour through three-eighths inch tubing choke, tubing pressure 550 pounds, casing pressure 350 pounds, Young saturation 6,035 feet, total depth 6,050 feet.



—Walter E. Wylie, Maps, Shreveport.

Panola County's new gas-distillate field opener. A. C. Glassell No. 1 Frost Lumber Industries, Mary Potts Survey

Bienville Parish

W. V. Bowles and others No. 1 Bank of Ringgold, NE cor. section 3-15-9, found salt water only on drill stem test at 4,998 feet in the Lower Glen Rose, and has been plugged and abandoned at total depth of 5,039 feet.

Caddo Parish

Prairie River Syndicate No. 1 Hutchinson, SW NW section 15-15-12, closely watched Caspania test, continues to core in the marine section of the Travis Peak at 6,920 feet.

Stanolind Oil & Gas Co. No. 109 Dillon, section 14-21-15, pumped 20 bbls. per day from a total depth of 1,682 feet in Nacatoch sand, Caddo field.

Gulf Refining Co.'s important Cross Lake test, No. 1 E. P. Hatcher, SW SE section 11-17-15, topped the Travis Peak at 5,997 feet, and continues to core at 6,050 feet in red and gray shale.

Bossier Parish

Flank tests being made on the Sligo gas field again gave indications of possible oil production this week. United Gas No. 1-F H. L. Skannall, NE cor. section 26-17-12, took drill stem tests in the

Pettitt sand (lowermost member of Lower Glen Rose) from 5,100 to 5,175 feet, showing 5,000,000 feet of gas, showings of oil and some mud. From 5,175 feet to 5,185 feet, 10,000,000 feet of gas, additional showings of oil and some mud were encountered. Oil and gas showings were also indicated during the next five feet. Total depth is now 5,190 feet in Pettitt sand, topped at 5,169 feet, and operators are preparing to run casing.

Premier Investment Co. No. 31 Wyche, NE NW NW section 14-19-11, was a routine completion in the Bellevue field, pumping 18 bbls. per day, total depth 421 feet in Nacatoch sand.

Estimated Daily Production

Estimated daily gross production all companies week ending October 10, was as follows:

NORTH LOUISIANA

	Bbls.
Bellevue	860
Caddo light	4,070
Caddo heavy	2,655
Converse	805
Cotton Valley heavy	265
Cotton Valley light	520
DeSoto and Red River	1,425
Elm Grove	355
Haynesville	3,250
Holly	145
Homer	2,575
Pleasant Hill	150
Rodessa	56,500
Sarepta-Carterville	470
Urania	3,000
Zwolle	925
Total	77,970

SOUTH ARKANSAS

Champagnolle	2,100
El Dorado	2,110
Lisbon	280
Miller County	660
Nevada	865
Smackover light	2,195
Smackover heavy	17,690
Stephens	585
Urbana	1,700
Total	28,185

Texas side of Rodessa field—14,010 bbls. daily.

Claiborne Parish

The territory's deepest test, United Gas-Triangle-Standard No. 2 Durrett, SW cor. section 31-20-5, flank test of the Sugar Creek gas field, has been fishing for 800 feet of stuck drill pipe at 8,616 feet for about 45 days, without success. Important shows were encountered in the Travis Peak here prior to this fishing job. This same group of operators continue to add to their holdings around the Sugar Creek field. Their second test of this structure, No. 1 Taylor, SE cor. of section 5-19-5w, is drilling at 3,300 feet.

E. T. Oakes No. 1 H. W. Patton Estate, NE cor. section 1-20-5, between the Homer and Sugar Creek structures, reported showings of gas from 5,044 to 5,060 feet, and coring continues at 5,068 feet.

Richland Parish

Gulf Refining Co.'s deep test of the Richland gas structure, No. 15 R. R. Rhymes, after topping the Travis Peak at 4,662 feet, has drilled to a depth of 7,510 feet without showings. They are now possibly in the marine beds of the Lower Trinity.

Sabine Parish

Cox & Whitehurst's No. 1 Whitney Corp., NW NW NE section 8-9-13, Glen Rose test of the Converse pool, continues to be a highly regarded deep field opener. Tests made of distillate from this well show it to be of 51-degree gravity or higher, indicating it is definitely Trinity production and disproving the previous general theory that showings were from upper beds.

It is expected 7-inch casing will be set this week and testing will follow. Total depth is now 5,503 feet in the Oolitic lime formation of Lower Glen Rose. Schlumberger test showed 30 feet or more of porosity at bottom of hole, from which about 50,000,000 feet of heavily saturated gas blew wild for several days before capping. Base of lower anhydrite stringer was 5,349 feet.

A. H. Traver's deep test of the Zwolle field, No. 8 Baker, NW NE of section 36-8-12, shared in the attention this week as it passed up the gas showing at 5,200 feet and continues to drill below 5,250 feet for a test of deeper beds.

Union Parish

Three routine completions in the northern part of the Monroe gas field accounted for an 18,000,000-foot initial combined flow, with rock pressures averaging 850 pounds.

Webster Parish

W. D. Ambrose No. 1 Tom Crichton, SW SW NW of section 36-18-9, recorded the third completion in the Sibley area of southern Webster Parish this week, flowing 50,000,000 feet of gas through five-eighths inch tubing choke, with from 50 to 60 bbls. of distillate daily, tubing pressure 2,100 pounds, casing pressure 2,200 pounds, total depth 5,770 feet, plugged back from 5,875 feet.

North Louisiana's most recent deep discovery, production from the Travis Peak at Cotton Valley, northern Webster Parish, has prompted the drilling of nine additional wells, five of which will reach the testing stage within a few weeks. The additional knowledge of this field afforded from the drilling of these wells is expected to prove the Cotton Valley structure in the Travis Peak and stimulate an orderly development of production here.

Ohio Oil Co.'s No. 1 Bodcaw Account No. 4, NE SE section 28-21-10, is scheduled for a 10,000 to 12,000-foot test through the marine series of Lower Trinity, a horizon not yet explored in northern Louisiana. After setting 16-inch casing at 777 feet, this well is drilling now below 5,200 feet.

ARKANSAS

Bradley County

Phillips Petroleum Co. has farmed out the drilling of No. 1 M. Bird, NW SE section 28-16-12, to Joe Modisette and associates. This well is on the Moreau Bay structure, known to be one of the most attractive closures mapped by an intensive geophysical survey of Southern Arkansas. Contract with Modisette provides that No. 1 Bird will be drilled to at least 300 feet in the big lime (Permian) or 50 feet in Permian salt. Ten-inch casing has been set in this well at 850 feet, and operators are now digging water well.

Hempstead County

Fitzwater & Spooner No. 2 Lafferty, section 17-14-24, old well drilled deeper, found only salt water in lower Trinity beds at 2,500 feet, and has been abandoned.

Miller County

Odell Hinson and "Dad" Joiner No. 1 Montant Realty Co., NE NW NE section 3-17-28, is now coring at 5,185 feet after reporting an 18-foot core of formation corresponding to the uppermost producing horizon at Rodessa, the Hill sand, showing gas and slight oil stains.

Nevada County

Southern Arkansas again drew a large share of attention when the scheduled deep test on the old Irma field reported important showings at shallow depths. Benedum-Trees Oil Co. No. 1 Groves, center N half SE NW section 10-14-20, tested 800 feet of 21 gravity oil on drill stem test 2,276 to 2,285 feet. It is reported that pumping equipment will be installed here for thorough test. Two additional tests have been announced nearby. A high fence is now being built around this location to keep spectators out, and lease prices have jumped from about $25 an acre to around $200.

MISSISSIPPI

The second gas well to be drilled on state-owned property in the Jackson gas field was completed, gauging between 30 and 40 million feet. Production is from the Selma chalk at a depth of 2,609 feet. Another well is authorized to be drilled on this property by the Mississippi legislature, this one to be a deep test for oil possibilities at Jackson.

EAST TEXAS (Border Counties)

Bowie County

Humble Oil & Refining Co. continues to sponsor a seismic crew northwest of Red Water, while its combination resistivity and seismograph crew is working the Maud area and south of Sulphur River in the Davis and Gideon Surveys of Cass County.

Marion County

Tom Bell and others No. 1 David Lane, Jones Survey, situated about 9 miles east and slightly south of Jefferson, was a new location for the week. Surface casing has been set at 70 feet.

Panola County

Serving as a new pool opener, A. C. Glassell, well known Shreveport independent, is now testing his No. 1 Frost Lumber Industries, on the Mary Potts Survey of northeastern Panola County. After drilling to the contract depth of 6,002 feet, 7-inch casing was set at 5,717 feet. Six showings of saturated sand had been encountered to the depth, together with several water sands. First test was made at 5,656 feet in the Lower Glen Rose by perforating at this depth, and as the well is now cleaning itself, it looks to be a 40 to 50 million open flow saturated gasser, and tested 6 to 8 million feet gas through one-fourth inch choke. The well is situated in the center of Glassell's 6,000-acre block.

Four other Lower Glen Rose tests are drilling in this general area, all of which are receiving close attention.

The Elysian gas field is to receive a deep flank test as Matex Oil Co. No. 1 Thomas M. Alstone, in northwest corner of the Alstone Survey, began moving in material this week.

United Gas continues to make seismic mapping of the Betany gas field in this county, while Shell is sponsoring a crew 8 miles southwest of Carthage. Sinclair is active 5 miles east of Henderson, with the Arkansas-Louisiana's two crews in the Carthage vicinity.

Michigan Fields

(Continued from Page 149)

to 1,289 feet. Gordon Oil Co. added 2,500,000 feet by deepening the No. 1 Garner, C SW NW section 32, Millbrook, from 1,267 to 1,293 feet.

Gordon Oil Co. also brought in No. 1 Homer Roberts Estate, C SW SW section 28, Millbrook, for an open flow of 16,500,000 feet daily, topping the Michigan Stray sands at 1,289 and drilling to 1,321 feet. It was the largest new completion of the week.

Hal-Be-Oyle & Gas Co. had a new 3,000,000-foot gasser, the No. 6 Taggart Brothers, C NW NE section 14-14n-9w, in the Austin Township, Mecosta County, field serving Muskegon with natural gas. It extended the field to the southeast.

Max Pray had developed a flow of 5,000,000 feet a day in No. 1 Shippey, C NW SW section 28, Millbrook, after drilling 18 feet into the Michigan Stray sands topped at 1,292 feet but was not through drilling. Four other gas tests were about ready for completion in Tri-Townships field.

Wildcat "Dusters"

Two central Michigan wildcats were completed dry last week. Olympia Oil & Gas Co. struck bottom water at 3,766 feet in the No. 1 L. M. Barnes, NW NW NW section 22-20n-1w, Butman Township, Gladwin County, after topping the Dundee at 3,665 feet. Colmur Oil & Gas Co. plugged and abandoned the No. 1 John Bell, C NE NW section 6-14n-8w, Morton Township, Mecosta County, after striking a show of oil at 3,168 feet. It was drilled to 3,661 feet.

New Locations

Ten wildcat locations have been placed under permit by the state conservation department including: Stork Oil Co. No. 1 Ed. Parker, SW SW NE section 25-7n-1w, Ovid Township, and Petroleum Exploration Co. No. 1 Jenson, C S half NE SE section 6, Bath Township, Clinton County; Wittmer Oil Co. No. 1 Musgrove, C SW SW section 3, Lincoln Township, Clare County; Cartier Oil Co. No. 1 McCoskey, C W half NE NW section 23, Emerson Township, Gratiot County; Co-Op Oil Co. and Miller Oil Co. No. 1 John W. Kurtz, SE NE SW section 5-8n-9e, Oregon Township, Lapeer County; H. H. Brown No. 1 Emil Kandt, C S half SE SW section 33-3n-13e, Macomb Township and County; Dibble Brothers No. 1 Ed. S. Townsend, SE NE section 4-20n-7w, Marion Township, Osceola County; Fletcher and Leman No. 1 Childers, NW NE SE section 15, Richfield Township, Roscommon County; Monitor Oil Co. No. 1 Tony Turnwald, SE SE NE section 32-9n-4e, Maple Grove Township, Saginaw County, and George E. Shepherd No. 1 Davis-Wiles, SE NW SW section 32-5n-3e, Antrim Township, Shiawassee County.

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Shell Oil Co., No. 16 Capitan, Santa Barbara Co.	32- 5-30	2,487	O.S. drlg.
General Pet. Corp., No. 19 Capitan, Santa Barbara Co.	32- 5-30	1,370	cmtd.
Texas Co., No. 1 Capitan, Santa Barbara Co.	1- 4-31	864	hd. sd. drlg.
Barnsdall-Rio Grande, No. 1 Elwood, Santa Barbara	15- 4-29	3,604	flow. 140 b.d.
Barnsdall-Rio Grande, No. 2 Elwood, Santa Barbara	15- 4-29	6,492	will perf.
Signal Oil Co., No. 8 Elwood, Santa Barbara Co.	tideland	2,361	sd. sh. drlg.
Valley Oil Co., No. 1 Santa Maria, Santa Barbara Co.	18-10-32	580	sd. sh. drlg.
Field Gasoline Corp., No. 1 Santa Maria, Santa Barbara	21- 9-33	2,752	sd. sh. drlg.
Apache Oil Co., No. 1 Santa Maria, Santa Barbara Co.	31- 9-33	3,984	sd. sh. drlg.
Union Oil Co., No. 10 Santa Maria, Santa Barbara Co.	24-10-34	2,747	cmtd. 2,048
Union Oil Co., No. 11 Santa Maria, Santa Barbara Co.	26- 9-34	4,000	sd. sh. drlg.
Todos Santos Oil Co., No. 1 Casmalia, Santa Barbara	29- 9-34	2,198	sd. sh. drlg.
Moore, Inc., No. 1 Santa Maria, Santa Barbara Co.	25-10-35	7,042	gr. sh. drlg.
Top Row Oil Co., No. 1 Lompoc, Santa Barbara Co.	10- 6-35	1,054	hd. sd. drlg.
Bankline Oil Co., No. 1 Coal Oil Pt., Santa Barbara Co.	tideland	5,510	P.B. 4,187
Calkan Pet. Co., No. 1 Sespe, Ventura Co.	23- 5-20	490	cleaning out
Union Oil Co., No. 10 Bardsdale, Ventura Co.	12- 3-20	6,561	shot formation
Merchants Pet. Co., No. 7 Sespe, Ventura Co.	1- 4-20	140	sd. sh. drlg.
Texas Co., No. 131 Shiells, Ventura Co.	4- 3-19	3,550	sd. sh. drlg.
El Rancho Oil Co., No. 1 Sespe, Ventura Co.	9- 3-19	4,990	C.P. 4,950
Condor Oil Co., No. 1 Sespe, Ventura Co.	6- 4-19	1,365	redrlg. 1,360
Topa Topa Oil Co., No. 1 Sespe, Ventura Co.	33- 5-19	2,200	cleaning out
Wasibi Oil Co., No. 1 Sespe, Ventura Co.	33- 5-19	998	reaming
Oil Ridge Oil Co., No. 1 Hopper Canyon, Ventura Co.	6- 4-18	2,770	swab. water
Bolsa Chica Oil Co., No. 4 Temescal, Ventura Co.	4- 4-18	2,994	br. sh. drlg.
Pacific Western Oil Co., No. 6 Temescal, Ventura Co.	4- 4-18	960	sd. sh. drlg.
Sunset Oil Co., No. 1 Temescal, Ventura Co.	21- 4-18	1,972	gr. sd. drlg.
Rennie Brothers, No. 1 Santa Paula, Ventura Co.	21- 4-21	1,040	bailing
Munding, J. J., No. 1 Ojai, Ventura Co.	22- 4-22	959	fishing
Texas Co., No. 1 Saticoy, Ventura Co.	6- 2-21	4,815	dry; abd.
Ventura Expl. Co., No. 1 Saticoy, Ventura Co.	30- 3-22	9,525	swab. water
Vaca Oil Co., No. 1 Oxnard, Ventura Co.	5- 1-21	2,822	tar sand
General Pet. Corp., No. 1 Padre Canyon, Ventura Co.	15- 3-24	2,682	bl. sh. drlg.
Continental Oil Co., No. 2 Padre Canyon, Ventura Co.	15- 3-24	5,462	sd. sh. drlg.
C. C. M. Oil Co., No. 1 Padre Canyon, Ventura Co.	15- 3-24	5,931	flow. 175 b.d.
Honolulu Oil Corp., No. 1 South Mountain, Ventura Co.	23- 3-21	4,475	gr. sd. drlg.
Associated Oil Co., No. 12 McGonigh, Ventura Co.	23- 3-23	8,745	hd. sd. drlg.
Associated Oil Co., No. 25 V.L.W. Ventura, Ventura Co.	23- 3-23	6,250	reaming
Associated Oil Co., No. 30 V.L.W. Ventura, Ventura Co.	24- 3-23	5,765	sd. sh. drlg.
Associated Oil Co., No. 28 Lloyd Ventura, Ventura Co.	27- 3-23	3,171	sd. sh. drlg.
Shell Oil Co., No. 28 Edison Ventura, Ventura Co.	21- 3-23	6,730	flow. 710 b.d.
Shell Oil Co., No. 88 Taylor Ventura, Ventura Co.	30- 3-23	6,973	cmtd. 6,839
General Pet. Corp., No. 17 Barnard Ventura, Ventura	23- 3-23	1,176	sd. sh. drlg.
Jennings, E P., No. 1 Alpaugh, Kern Co.	4-24-23	3,010	sd. sh. drlg.
Den Petroleum Co., No. 1 Devils Den, Kern Co.	20-25-19	1,287	redrlg. 1,091
Standard Oil Co., No. 1 Lost Hills, Kern Co.	2-26-20	6,887	P.B. 3,606
Associated Oil Co., No. 4 Lost Hills, Kern Co.	1-26-20	5,197	sd. sh. drlg.
Associated Oil Co., No. 6-L-3 Lost Hills, Kern Co.	2-26-20	650	sd. sh. drlg.
Associated Oil Co., No. 12-A-3 Lost Hills, Kern Co.	11-26-20	1,530	sd. sh. drlg.
Lincoln Pet. Co., No. 2 Lost Hills, Kern Co.	12-26-20	2,063	P.B. 2,040
Texas Co., No. 1 Lost Hills, Kern Co.	11-26-20	1,772	sd. sh. drlg.
Universal Oil Consd., No. 1 Lost Hills, Kern Co.	20-26-21	3,506	gr. sd. drlg.
East Puente Oil Co., No. 22 McKittrick, Kern Co.	11-30-21	2,516	P.B. 1,318
Woodward, Hoke, No. 6 McKittrick, Kern Co.	11-30-21	1,162	O.S. drlg.
Bergman, H. L., No. 1 McKittrick, Kern Co.	30-30-22	1,700	br. sh. drlg.
General Pet. Co., No. 1 South Belridge, Kern Co.	30-28-21	11,377	suspended
Rio Grande Oil Co., No. 1 Belridge, Kern Co.	18-28-20	2,545	redrlg. 2,534
Culbertson & Sipley, No. 1 Belridge, Kern Co.	35-28-25	1,660	rigging up
Associated Oil Co., No. 5 North Belridge, Kern Co.	34-27-20	8,396	reaming
Belridge Oil Co., No. 12-1 North Belridge, Kern Co.	1-28-20	3,994	sd. sh. drlg.
Belridge Oil Co. No. 15-35 North Belridge, Kern Co.	35-27-20	1,962	hd. sd. drlg.
Belridge Oil Co., No. 5-1 North Belridge, Kern Co.	1-28-20	6,670	hd. sh. drlg.
Continental Oil Co., No. 8 North Belridge, Kern Co.	36-27-20	8,075	hd. sh. drlg.
Shell Oil Co., No. 1 Antelope Plains, Kern Co.	5-28-20	4,521	gr. sd. drlg.
Associated Oil Co., No. 21, Kern Front, Kern Co.	23-28-27	2,200	plug. bottom
Associated Oil Co., No. 41 Kern Front, Kern Co.	23-28-27	1,953	cleaning out
National Oil Co., No. 3 Kern Front, Kern Co.	11-28-27	1,720	cleaning out
Honolulu Oil Corp., No. 89 Kern Front, Kern Co.	8-28-27	2,873	cmtd. 2,764
McDonald & Dearin, No. 3 Kern Front, Kern Co.	11-28-27	1,695	sd. sh. drlg.
Italo Pet. Corp., No. 33 Kern Front, Kern Co.	16-28-27	2,905	rig. to pump
Sesnon Oil Co., No. 1 Kern Front, Kern Co.	17-28-27	1,250	sd. sh. drlg.
Seven Spot Oil Co., No. 1 Kern Front, Kern Co.	13-28-27	1,970	pump. 20 b.d.
General Pet. Corp., No. 38 Kern Front, Kern Co.	14-28-27	1,195	sd. sh. drlg.
Union Oil Co., No. 1 Kern Front, Kern Co.	11-28-27	2,354	dry; abd.
Kaar, Charles, No. 1 Kern Front, Kern Co.	26-28-27	2,250	cleaning out
Bell Corp., No. 2 McVan, Kern Co.	14-27-27	1,218	rig. to pump
Harp, E. J., No. 1 Dominion, Kern Co.	27-26-28	1,432	P.B. 1,420
Shell Oil Co., No. 15 Mount Poso Security, Kern Co.	16-27-28	1,744	rig. to pump
Shell Oil Co., No. 18 Mount Poso Security, Kern Co.	16-27-28	910	sd. sh. drlg.
Chevalier, J. J., No. 1 Mount Poso Vedder, Kern Co.	3-27-28	1,455	cmtd. 1,431
General Pet. Corp., No. 8 Mount Poso Heisen, Kern Co.	16-27-28	1,665	rig. to pump
Bethlehem Expl. Co., No. 2 Mount Poso, Kern Co.	10-27-27	1,570	cleaning out
Bargol Oil Co., No. 3 Mount Poso, Kern Co.	11-27-27	1,194	cleaning out
Doyle Pet. Co., No. 1 Jasmine, Kern Co.	15-25-27	2,920	idle
Hall-Baker Co., No. 20-1 Jasmine, Kern Co.	20-25-27	1,575	sd. sh. drlg.
Elbee Oil Co., No. 1 Fruitvale, Kern Co.	23-29-27	3,805	will P.B.
Magnet Oil Co., No. 5 Fruitvale, Kern Co.	21-29-27	4,033	cmtd. 3,957
Western Gulf Oil Co., No. 31 Fruitvale, Kern Co.	21-29-27	3,945	completing
Western Gulf Oil Co., No. 32 Fruitvale, Kern Co.	27-29-27	3,450	cmtd. 3,313
Miami Oil Co., No. 1 Fruitvale, Kern Co.	21-29-27	3,531	sd. sh. drlg.
Oil Incorporated, No. 1 Fruitvale, Kern Co.	26-29-27	3,390	cleaning out
Nydia Pet. Co., No. 2 Fruitvale, Kern Co.	26-29-27	3,410	cleaning out
Dixie-Lee Oil Co., No. 5 Fruitvale, Kern Co.	23-29-27	3,290	O.S. drlg.
Mosebach Oil Co., No. 1 Fruitvale, Kern Co.	21-29-27	4,166	recmtd. 4.030
Mosebach Oil Co., No. 2 Fruitvale, Kern Co.	26-29-27	1,565	sd. sh. drlg.
Allied Pet. Co., No. 20 Mountain View, Kern Co.	19-30-29	4,998	sd. sh. drlg.
Buffalo Oil Co., No. 4 Mountain View, Kern Co.	19-30-29	4,897	sd. sh. drlg.
Hogan Pet. Co., No. 18 Mountain View, Kern Co.	32-30-29	5,596	sd. sh. drlg.
Hogan Pet. Co., No. 19 Mountain View, Kern Co.	5-31-29	2,971	sd. sh. drlg.
Sheldon Oil Co., No. 2 Mountain View, Kern Co.	19-30-29	5,170	sd. sh. drlg.
Standard Oil Co., No. 32 Mountain View, Kern Co.	13-30-28	5,105	cmtd. 4,825
Standard Oil Co., No. 33 Mountain View, Kern Co.	18-30-29	1,647	sd. sh. drlg.
Shell Oil Co., No. 11 Mountain View, Kern Co.	32-30-29	5,997	sd. sh. drlg.
Mohawk Pet. Co., No. 3 Mountain View, Kern Co.	30-30-29	5,770	sd. sh. drlg.
Mohawk Pet. Co., No. 4 Mountain View, Kern Co.	30-30-29	5,998	flow. 145 b.d.
Mohawk Pet. Co., No. 8 Mountain View, Kern Co.	30-30-29	5,676	O.S. drlg.
Mohawk Pet. Co., No. 2 Arvin, Kern Co.	10-31-29	5,740	hd. sh. drlg.
General Pet. Corp., No. 1 Arvin, Kern Co.	26-31-29	6,760	reaming
Associated Oil Co., No. 1 Arvin, Kern Co.	3-31-29	5,627	may abandon
Shell Oil Co., No. 1 Arvin, Kern Co.	15-31-29	6,067	sd. sh. drlg.
Associated Oil Co., No. 1 Rio Bravo, Kern Co.	30-29-25	6,274	sd. sh. drlg.
Standard Oil Co., No. 11-1 Rio Bravo, Kern Co.	19-29-26	5,571	sd. sh. drlg.
Piute Holding Co., No. 1 Round Mountain, Kern Co.	17-28-29	716	sd. sh. drlg.
Shell Oil Co., No. 1-8 Olcese Round Mountain, Kern	17-28-29	1,919	cmtd. 1,830
Shell Oil Co., No. 11 Freeman Round Mountain, Kern	20-28-29	1,274	sd. sh. drlg.
Jergins Trust, No. 23-4 Edison, Kern Co.	23-30-29	1,864	testing
Jergins Trust, No. 23-5 Edison, Kern Co.	23-30-29	1,995	pump. 50 b.d.
Wood-Callahan Oil Co., No. 5 Edison, Kern Co.	23-30-29	2,097	pump. 40 b.d.
Bender, E. A., No. 1 San Emidio, Kern Co.	14-10-23	900	bailed dry
Texas Co., No. 1 San Emidio, Kern Co.	11-11-22	9,664	sd. sh. drlg.
Standard Oil Co., No. 9-1 Ten Section, Kern Co.	34-30-26	4,870	sd. sh. drlg.
Standard Oil Co., No. 10-1 Ten Section, Kern Co.	20-30-26	7,855	hd. sd. drlg.
Shell Oil Co., No. 2 Ten Section, Kern Co.	29-30-26	8,796	hd. sd. drlg.
Ohio Oil Co., No. 1-B Ten Section, Kern Co.	4-32-26	1,671	sd. sh. drlg.
Ohio Oil Co., No. 1-E Ten Section, Kern Co.	19-30-26	7,323	sd. sh. drlg.
Fenray Oil Co., No. 1 Midway-Sunset, Kern Co.	34-32-24	4,210	redrlg. 3,914
C. C. M. Oil Co., No. 1-28 Midway-Sunset, Kern Co.	28-32-23	3,462	br. sh. drlg.
C. C. M. Oil Co., No. 19-21 Midway-Sunset, Kern Co.	21-32-23	2,362	pump. 70 b.d.
C. C. M. Oil Co., No. 20-21 Midway-Sunset, Kern Co.	21-32-23	1,492	sd. sh. drlg.
C. C. M. Oil Co., No. 21-21 Midway-Sunset, Kern Co.	21-32-23	1,450	sd. sh. drlg.
Evans, H. B., No. 11 Midway-Sunset, Kern Co.	35-32-23	2,330	pump. 80 b.d.
Burkholder Oil Co., No. 1 Midway-Sunset, Kern Co.	25-32-23	2,536	will deepen
Burkholder Oil Co., No. 2 Midway-Sunset, Kern Co.	25-32-23	1,190	sd. sh. drlg.
Garner Royalties, No. 7 Midway-Sunset, Kern Co.	22-32-23	1,651	bailing
Alford Oil Co., No. 6 Midway-Sunset, Kern Co.	25-12-24	2,152	sd. sh. drlg.
Hallmark Oil Co., No. 5 Midway-Sunset, Kern Co.	25-12-24	2,785	O.S. drlg.
Merritt-Annex Oil Co., No. 4 Midway-Sunset, Kern Co.	25-12-24	2,550	sd. sh. drlg.
Zamloch, Carl, No. 1 Midway-Sunset, Kern Co.	22-32-23	2,135	pump. 460 b.d.
Sheppard Oil Co., No. 1 Midway-Sunset, Kern Co.	12-11-24	1,783	sd. sh. drlg.
Standard Oil Co., No. 3-25-L Midway-Sunset, Kern Co.	25-12-24	3,224	cleaning out
Standard Oil Co., No. 20-33-D Midway-Sunset, Kern	26-12-24	3,173	pump. 384 b.d.
Five Points Oil Co., No. 2 Midway-Sunset, Kern Co.	18-11-23	1,186	repair mach.
Pomoc Oil Co., No. 8 Midway-Sunset, Kern Co.	15-32-23	2,710	O.S. drlg.
Birch-Ranch Oil Co., No. 1 Midway-Sunset, Kern Co.	22-32-23	1,842	br. sh. drlg.
Jerman, R. W., No. 1 Midway-Sunset, Kern Co.	17-31-23	4,374	sd. sh. drlg.
Pan American, No. 66 Midway-Sunset, Kern Co.	22-32-23	2,186	recmtd. 2,103
Berry & Ewing, No. 3 Midway-Sunset, Kern Co.	21-32-23	651	O.S. drlg.
Texas Co., No. 16 Midway-Sunset, Kern Co.	32-32-24	2,783	reaming
North American, No. 3 Midway-Sunset, Kern Co.	2-32-24	4,155	cmtd. 3,955
St. Helens Pet. Co., No. 1 Midway-Sunset, Kern Co.	22-32-23	3,425	will deepen
Associated Oil Co., No. 1 Tejon, Kern Co.	17-11-19	3,160	dry; abd.
Reserve Oil & Gas Co., No. 33-1 Tejon, Kern Co.	33-11-19	6,032	cleaning out
Reserve Oil & Gas Co., No. 33-2 Tejon, Kern Co.	33-11-19	4,474	cleaning out
Ohio Oil Co., No. 2 Tejon, Kern Co.	21-11-19	2,785	sd. sh. drlg.
Western Gulf, No. 3 Cantua, Fresno Co.	3-17-15	8,527	testing
K. N. D. A., No. 4-18-J Kettleman North, Fresno Co.	18-21-17	8,840	gr. sd. drlg.
K. N. D. A., No. 21-30-J Kettleman North, Fresno Co.	30-21-17	8,160	fish. D.P.
K. N. D. A., No. 52-30-J Kettleman North, Fresno Co.	30-21-17	5,331	sd. sh. drlg.
K. N. D. A., No. 58-28-J Kettleman North, Fresno Co.	28-21-17	6,834	gr. sd. drlg.
K. N. D. A., No. 63-28-J Kettleman North, Fresno Co.	28-21-17	7,715	cmtd. 7,703

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Bldg., building.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
Br. sh., brown shale.
B.S., basic sediment.
C.P., casing pressure.
Cd. or Crd., cored.
C.D., corrected depth.
Cg., coring.
C.L., center line.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging or plugged back.
P.B.P., pulling big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.R.T., rigging up rotary tools.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sd. sh., sandy shale.
Sdtr., or St., sidetracking.
S.D.P.L., shut down for pipe line.
S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T.P., tubing pressure.
Tr., tract.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.P., working pressure.
W.S.O., water shutoff.
W.S.O.O.K., water shutoff O.K.
W.S.O.N.G., water shutoff no good.
W.S.R. or W.O.S.R., wait on standard rig.
Wtr., water.

K. N. D. A., No. 83-24-H Kettleman North, Fresno Co.	24-21-16	8,953	gr. sd. drlg.
K. N. D. A., No. 85-32-J Kettleman North, Fresno Co.	32-21-17	2,220	sd. sh. drlg.
K. N. D. A., No. 52-34-J Kettleman North, Kings Co.	34-21-17	5,693	br. sh. drlg.
K. N. D. A., No. 72-34-J Kettleman North, Kings Co.	34-21-17	7,219	sd. sh. drlg.
K. N. D. A., No. 47-2-P Kettleman North, Kings Co.	2-22-17	7,085	fish. casing
Standard Oil Co., No. 32-19-J Kettleman North, Fresno	19-21-17	8,751	fish. D.P.
Standard Oil Co., No. 61-19-J Kettleman North, Fresno	19-21-17	8,890	cmtd. 8,660
Standard Oil Co., No. 72-19-J Kettleman North, Fresno	19-21-17	8,770	fish. D.P.
Standard Oil Co., No. 2-19-J Kettleman North, Fresno	19-21-17	6,393	sd. sh. drlg.
Standard Oil Co., No. 46-13-H Kettleman North, Fresno	13-21-16	7,851	br. sh. drlg.
Standard Oil Co., No. 54-1-U Kettleman North, Kings	1-23-18	9,675	recmtd. 8,125
Standard Oil Co., No. 48-35-J Kettleman North, Kings	35-21-17	7,420	hd. sd. drlg.
Standard Oil Co., No. 46-19-V Kettleman Middle, Kings	19-23-19	6,373	br. sh. drlg.
Kettleman View Oil Co., Well No. 1, Kings Co.	29-22-19	4,020	gr. sd. drlg.
Milheim Oil Corp., No. 1 Tulare, Kings Co.	20-22-22	5,815	idle
Associated Oil Co., No. 1 Avenal, Kings Co.	33-23-17	2,950	gr. sd. drlg.
McBurney Oil Co., No. 1 Carrizo, San Luis Obispo Co.	23-32-22	641	sd. sh. drlg.
Foster, R. A., No. 1 Carrizo, San Luis Obispo Co.	2-32-22	5,000	br. sh. drlg.
United Oil Co., No. 2 Panorama, San Luis Obispo Co.	2-32-21	1,820	sd. sh. drlg.
Union Oil Co., No. 1 Huasna, San Luis Obispo Co.	22-32-15	1,452	sd. sh. drlg.
Lewis, A. O., No. 1 Pecho, San Luis Obispo Co.	34-30-10	2,310	will deepen
Martin, J. D., No. 4 Pismo, San Luis Obispo Co.	5-32-13	3,002	sd. sh. drlg.
Martin, J. D., No. 5 Pismo, San Luis Obispo Co.	5-32-13	3,050	sd. sh. drlg.
Birch-Royer Oil Co., No. 1 Pismo, San Luis Obispo Co.	33-31-13	2,376	sd. sh. drlg.
Cholame Synd., No. 1 Cholame, San Luis Obispo Co.	10-25-15	3,687	redrlg. 3,394
Standard Oil Co., No. 3 McDonald Island, San Joaquin	31- 2-5	5,312	26,144 m.c.f.
Shell Oil Co., No. 1 Pleyto, Monterey Co.	34-24-10	8,994	P.B. 8,750
Shell Oil Co., No. 2 Pleyto, Monterey Co.	34-24-10	2,591	sd. sh. drlg.
Texas Co., No. 2 Eureka, Humboldt Co.	22- 3-1	4,428	redrlg. 3,251
Amerada Pet. Co., No. 2 Rio Vista, Solano Co.	26- 4-2	6,765	hd. sh. drlg.
Standard Oil Co., No. 2 Rio Vista, Solano Co.	27- 4-2	4,786	sd. sh. drlg.
Trico Oil & Gas Co., No. 1 Angiola, Tulare Co.	7-23-23	3,187	P.B. 1,800
Trico Oil & Gas Co., No. 2 Angiola, Tulare Co.	27-21-25	1,542	sd. sh. drlg.
Associated Oil Co., No. 1 Sargent, San Benito Co.	5-12-4	4,300	sd. sh. drlg.
Seaboard Oil Co., No. 1 Alameda, Alameda Co.	13- 3-3	4,132	hd. sh. drlg.

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Richfield Oil Co., No. 1 El Segundo, Los Angeles Co.	18- 3-14	5,464	sd. sh. drlg.
Signal Finance, No. 1 Hawthorne, Los Angeles Co.	10- 3-14	9,300	sd. sh. drlg.
Marl Oil Co., No. 1 Moneta, Los Angeles Co.	35- 3-14	7,165	form. test
Listie, J. I., No. 1 Moneta, Los Angeles Co.	33- 3-14	7,352	cleaning out
C. C. M. Oil Co., No. 2 Torrance, Los Angeles Co.	31- 3-14	3,985	sd. sh. drlg.
C. C. M. Oil Co., No. 8 Torrance, Los Angeles Co.	9- 4-14	3,986	sd. sh. drlg.
Ford, T., No. 1 Torrance, Los Angeles Co.	6- 4-14	3,375	sd. sh. drlg.
Shepard, Harry, No. 1 Torrance, Los Angeles Co.	6- 4-14	722	cmtd. 722
Pongratz, Gus, No. 2 Torrance, Los Angeles Co.	6- 4-14	1,971	sd. sh. drlg.
M. W. Pet. Co., No. 1 Torrance, Los Angeles Co.	6- 4-14	3,582	pump. 120 b.d.
Clark, T. R., No. 1 Torrance, Los Angeles Co.	31- 3-14	4,230	reaming
Shell Oil Co., No. 1 Kranz Torrance, Los Angeles Co.	32- 3-14	3,720	pump. 50 b.d.
Collier, P. V., No. 1 Torrance, Los Angeles Co.	16- 4-14	3,781	to deepen
Terry, George, No. 1 Redondo, Los Angeles Co.	8- 4-14	4,607	P.B. 3,500
Standard Oil Co., No. 80 Inglewood, Los Angeles Co.	8- 2-14	4,090	will cmt.
Standard Oil Co., No. 24 Inglewood Rubel, Los Angeles	8- 2-14	3,375	cmtd. 3,295
Crude Oil Drlg. Co., No. 1 Gardena, Los Angeles Co.	31- 3-13	5,375	hd. sh. drlg.
West American, No. 1 Gardena, Los Angeles Co.	5- 4-13	6,151	sd. sh. drlg.
Shell Oil Co., No. 84 Dominguez Reyes, Los Angeles	33- 3-13	7,200	O.S. drlg.
Shell Oil Co., No. 87 Dominguez Reyes, Los Angeles	33- 3-13	945	cmtd. 945
Union Oil, No. 47 Domingues Callender, Los Angeles	33- 3-13	8,710	sd. sh. drlg.
Union Oil, No. 50 Domingues Callender, Los Angeles	33- 3-13	4,753	sd. sh. drlg.
Union Oil, No. 44 Domingues Hellman, Los Angeles	33- 3-13	2,570	sd. sh. drlg.
Santa Rita Oil Co., No. 1 Rosecrans, Los Angeles Co.	18- 3-13	761	sd. sh. drlg.
Continental Oil Co., No. 39 Seal Beach, Los Angeles	11- 5-12	6,445	P.B. 6,060
Eastern Oil Co., No. 1 Del Rey, Los Angeles Co.	22- 2-15	7,562	swabbing
Sharby Oil Co., No. 1 Del Rey, Los Angeles Co.	22- 2-15	3,581	sd. sh. drlg.
Union Oil Co., No. 17 Vidor Del Rey, Los Angeles Co.	27- 2-15	650	sd. sh. drlg.
Del Rey Drlg. Co., No. 1 Del Rey, Los Angeles Co.	27- 2-15	6,538	pump. dry
Superior Oil Co., No. 1 Del Rey, Los Angeles Co.	25- 2-15	4,975	sd. sh. drlg.
Yant Pet. Corp., No. 1 Newhall, Los Angeles Co.	1- 3-16	2,816	fishing
Holbrook Pet. Co., No. 1 Newhall, Los Angeles Co.	28- 4-16	3,950	sd. sh. drlg.
Barnsdall Oil Co., No. 1 Newhall, Los Angeles Co.	26- 4-17	3,552	sd. sh. drlg.
Pan American, No. 1 Wilmington, Los Angeles Co.	20- 4-13	6,351	sd. sh. drlg.
Bankline Oil Co., No. 1 Wilmington, Los Angeles Co.	34- 4-13	3,510	rig. to pump
General Pet. Corp., No. 1 Wilmington, Los Angeles Co.	4- 5-13	6,590	sd. sh. drlg.
Gauthier Oil Co., No. 1 Wilmington, Los Angeles Co.	27- 4-13	1,530	sd. sh. drlg.
Monarch Oil Corp., No. 1 Topango Canyon, Los Angeles	5- 1-16	1,574	sd. sh. drlg.
Woodward, J. A., No. 1 Montebello, Los Angeles Co.	4- 2-11	3,197	pump. water
Standard Oil Co., No. 87 Montebello, Los Angeles Co.	1- 2-12	2,821	pump. 115 b.d.
Standard Oil Co., No. 89 Montebello, Los Angeles Co.	2- 2-12	2,471	sd. sh. drlg.
Universal Consd., No. 8 Montebello, Los Angeles Co.	5- 2-11	7,471	P.B. 5,696
Universal Consd., No. 9 Montebello, Los Angeles Co.	5- 2-11	5,900	pump. O.&W.
Universal Consd., No. 10 Montebello, Los Angeles Co.	5- 2-11	5,897	recmtd. 5,820
Universal-Richfield, No. 1-J Montebello, Los Angeles	6- 2-11	4,870	sd. sh. drlg.
Republic Petroleum Co., No. 1 Montebello, Los Angeles	6- 2-11	6,070	dry; abd.
Richfield Oil Co., No. 2 Montebello, Los Angeles Co.	5- 2-11	7,560	P.B. 6,075
St. Helens Pet. Co., No. 8 Montebello, Los Angeles Co.	5- 2-11	5,060	may abdn.
St. Helens Pet. Co., No. 19 Montebello, Los Angeles Co.	2- 2-12	3,875	pump. test
St. Helens Pet. Co., No. 20 Montebello, Los Angeles Co.	2- 2-12	3,710	pump. 40 b.d.
Texas Co., No. 15 Montebello, Los Angeles Co.	6- 2-11	5,388	cmtd. 5,388
Hathaway, No. 3 Fulton, Santa Fe Spgs., Los Angeles	6- 2-11	4,130	cleaning out
General Pet., No. 46-D Santa Fe Springs, Los Angeles	6- 3-11	4,575	bailing
Ring Oil Co., No. 4 Santa Fe Springs, Los Angeles Co.	5- 3-11	4,666	bailing
Union Oil Co., No. 31 Santa Fe Springs, Los Angeles	6- 3-11	4,080	P.B. 4,045
Union Oil Co., No. 34 Santa Fe Springs, Los Angeles	6- 3-11	4,490	cleaning out
Union Oil Co., No. 35 Santa Fe Springs, Los Angeles	6- 3-11	2,990	sd. sh. drlg.
Union Oil Co., No. 36 Santa Fe Springs, Los Angeles	6- 3-11	865	cmtd. 865
Union Oil Co., No. 98 Santa Fe Springs, Los Angeles	6- 3-11	3,300	sd. sh. drlg.
Union Oil Co., No. 100 Santa Fe Springs, Los Angeles	6- 3-11	4,055	cleaning out
Union Oil Co., No. 101 Santa Fe Springs, Los Angeles	6- 3-11	4,056	sd. sh. drlg.
Union Oil Co., No. 102 Santa Fe Springs, Los Angeles	6- 3-11	4,536	C.S. drlg.
Vanda Petroleum, No. 1 Santa Fe Springs, Los Angeles	6- 3-11	7,972	sd. sh. drlg.
Charter Oak Oil Co., No. 1 Covina, Los Angeles Co.	7- 1-9	630	sd. sh. drlg.
Bernstein, M. E., No. 1 Artesia, Los Angeles Co.	25- 3-12	5,910	will P.B.
Shell, No. 43 Alamitos Long Beach, Los Angeles Co.	29- 4-12	1,709	sd. sh. drlg.
Great Coastal Oil Co., No. 1 Elsinore, Riverside Co.	36- 5-5	2,985	hd. sd. drlg.
Associated Oil Co., No. 4 Huntington, Orange Co.	34- 5-11	4,050	rigged up
Associated Oil Co., No. 8 Huntington, Orange Co.	34- 5-11	4,630	cleaning out
Associated Oil Co., No. 2 Huntington, Orange Co.	34- 5-11	4,290	bailing
Westport Oil Co., No. 1 Huntington, Orange Co.	34- 5-11	1,954	sd. sh. drlg.
Pan-American Pet. Co., No. 3 Huntington, Orange Co.	34- 5-11	3,999	cleaning out
Standard Oil Co., No. 12 Huntington, Orange Co.	12- 6-11	2,935	wet
Elliott Oil Co., No. 1 Huntington, Orange Co.	34- 5-11	1,591	sd. sh. drlg.
Lucky Strike Oil Co., No. 7 Huntington, Orange Co.	2- 6-11	2,870	redrlg. 1,998
Huntington Signal Oil Co., No. 1 Huntington, Orange	34- 5-11	4,000	P.B. 3,965
Shell Oil Co., No. 19 Brea, Orange Co.	2- 3-10	5,097	O.S. drlg.
Standard Oil Co., No. 2-5 Coyote, Orange Co.	22- 3-10	3,790	reblding. rig
Holly Oil Co., No. 1 East Coyote, Orange Co.	20- 3-9	4,512	cleaning out
West American Oil Co., No. 1 East Coyote, Orange Co.	24- 3-10	5,850	pump. 75 b.d.
Continental Oil Co., No. 1 East Coyote, Orange Co.	20- 3-9	2,751	P.B. 2,725
Hancock Oil Co., No. 1 East Coyote, Orange Co.	17- 3-9	3,278	P.B. 2,883
West Coast Refg. Co., No. 1 Santa Ana, Orange Co.	25- 3-9	1,086	hd. sd. drlg.
Union Oil Co., No. 29 Chapman Richfield, Orange Co.	30- 3-9	7,376	sd. sh. drlg.
Union Oil Co., No. 33 Chapman Richfield, Orange Co.	30- 3-9	4,442	pump. 50 b.d.
Union Oil Co., No. 35 Chapman Richfield, Orange Co.	30- 3-9	3,594	rig. to pump
Calif. Eastern Oil Co., No. 1 Placentia, Orange Co.	31- 3-9	4,786	fish. D.P.
Melbourne Pet. Co., Well No. 1, San Bernardino Co.	12- 3-8	2,233	pump. 100 b.d.
Equitable Pet. Co., No. 1 Wildcat, San Bernardino Co.	11-10-5	2,812	hd. sd. drlg.

KANSAS

Week Ending October 10 (Descriptions are East unless marked otherwise)

Barber County

Sinclair Prairie Oil Co. No. 1 Gentry, NE cor. sec. 1-33-15w. Miss. 4,802 ft.; set 9-in. csg. 4,805 ft.; W.O.C.

Barton County

Armer & Vernon O. & G. Co. No. 1 Ainsworth, NE NE SE sec. 33-16-13w. M.I.M.

F. E. Bailey et al No. 1 Hammeke, NE NE SW sec. 12-18-12w. Set 20-in. pipe 40 ft.; S.D. 315 ft.

Freeborn et al No. 1 Sooy, NW NW NE sec. 27-18-12w. Cellar.

S. L. Parks No. 1 Peach, SE cor. sec. 24-16-14w. R.U.S.T.

C. L. Price No. 1 Deutsch, NW NW NE sec. 16-16-13w. T.D. 2,420 ft.; U.R. 8-in. csg.

G. B. Rose and W. H. Lant No. 1 Redetzke, NE NW NW sec. 1-16-11w. Set 5-in. csg. 3,200 ft.; Sil. 3,326-30 ft.; bld. 4 B.O.P.H. for 12 hrs.; 2,000 ft. wtr. in hole; T.D. 3,346 ft.; D.&A.

Yarnell & Carlson No. 1 Roth, NE cor. sec. 35-18-12w. Set 8-in. csg. 2,678 ft.; T.D. 2,900 ft.

Butler County

Hutchinson Oil & Gas Co. et al No. 1-A Westfall, SE SW SE sec. 13-27-3. Set 13-in. csg. 879 ft.; drlg. 1,360 ft.

Simpson Oil Co. No. 1 Deblem, SW cor. sec. 11-26-6. Drlg. 840 ft.

Ed Solomon No. 1 Church, SW NE SE sec. 8-28-5. Drlg. 200 ft.

Chase County

Propp et al No. 1 Fromm, SE cor. sec. 29-18-9e. 10-in. csg. 2,118 ft.; C.O.

Clark County

Olson & Watchorn No. 1 Morrison, C SE SW sec. 17-32-21w. Drlg. 6,140 ft.

Cowley County

Craft et al No. 1 Whitson, NE cor. sec. 20-33-4e. R.U.

C. H. Cross No. 1 Cook, SW cor. sec. 6-32-6. Loc.

Home Natural Co. & McNish No. 2 Werner, SE SE SW sec. 31-32-6. Set 15-in. csg. 367 ft.; drlg. 1,040 ft.

Wakefield et al No. 1 Tinker, NW NW SE sec. 36-32-3. Loc.

Decatur County

Winkler & Koch No. 1 Vessey, C NW SE sec. 26-3-26w. Set 12-in. csg. 110 ft.; drlg. 1,960 ft.

Edwards County

Skelly Oil Co. et al No. 1 Kipp, C SE SE NE sec. 27-25-14w. Cellar.

Stanolind O. & G. Co. et al No. 1 Donovan, C SE SE sec. 14-26-18w. R.U.R.

Ellis County

Bradley Oil Co. et al No. 1 Penney-Wann SE cor. sec. 13-15-20w. Sd. 3,653-57 ft.; pot. 420 bbls. in 22½ hrs.; comp.

Bridgeport Mch. Co. and Hall No. 1 Madden Est., NE NW NW sec. 26-15-18w. O.W.D.D.; 6-in. csg. 3,341 ft.; T.D. 3,440 ft.; S.D.

Bridgeport Mch. Co. No. 1 Ubert, NE NE NW sec. 12-13-18w. Sil. 3,598 ft. Pay 3,630-37 ft.; T.D. 3,707 ft.; acd.; no result; swbd. 155 bbls. oil and 21 bbls. wtr. in 14 hrs.; P.B. 3,638 ft. and P.B.P.

Jas. Brouk et al No. 1 Jacobs, NW NW SE sec. 31-15-16w. Anhy. 981 ft.; 10-in. csg. 991 ft.; drlg. 1,000 ft.

Empire O. & R. Co. No. 1 Samuelson, NE NE SE sec. 31-11-16w. Sil. 3,735 ft.; T.D. 3,744 ft.; H.F.W. and D.&A.

Champlin Refining Co. No. 1 Hadley, SE SW NE sec. 30-11-17w. Topeka 3,085 ft.; Lansing 3,389 ft.; Basal sd. 3,610 ft.; H. F.W. 3,613-18 ft.; drlg. 3,624 ft.

Glick & Morrow No. 1 Staah, SW SW SE sec. 6-13-17w. 7-in. csg. 3,367 ft.; R.U. S.T. 3,369 ft.; T.D.

Frank Hamilton et al No. 1 Sack, NW NW SE sec. 26-13-19w. 8-in. 1,218 ft.; Topeka 3,174 ft.; Oswald 3,450 ft.; Cong. 3,700 ft.; T.D. 3,715 ft.; U.R.

Jones & Shelbourne No. 1 Gunther, SE SE SW sec. 9-11-19w. Sil. 3,646 ft.; wtr. 3,661-64 ft.; T.D. 3,703 ft.; D.&A.

Kansas Dev. Corp. No. 1 Haller, SE SE NW sec. 10-11-18w. Anhydrite 1,190 ft.; Topeka 2,915 ft. (cor.); T.D. 3,050 ft.; acidized; potential prod. 531 bbls. oil and 2% wtr.; comp.

Ted Kors et al No. 1 Koblitz, SE SW NW sec. 23-12-18w. Anhy. 1,410 ft.; 12-in. csg. 1,424 ft.; drlg. 1,665 ft.

Lario O. & G. Co. et al No. 1 Cress, NE cor. sec. 13-11-17w. S.D. 346 ft.

Lario O. & G. Co. No. 1 Marshall, NW SE NE sec. 36-11-18w. Anhy. 1,347 ft.; 10-in. csg. 2,531 ft.; drlg. 2,690 ft.

Murphy Oil Co. No. 1 Wiesner, SE SE SW sec. 12-14-19w. R.U.

Simar Oil Co. et al No. 1 Leiker, NW NW SE sec. 12-15-18w. H.F.W. 3,375 ft.; 6-in. csg. 3,408 ft.; T.D. 3,475 ft.; fsg.

Taylor et al No. 1 Emery, NE NE NE sec. 23-14-18w. Set 12-in. csg. 793 ft.; S.D.

Winkler & Koch No. 1 Jensen, SW SW NE sec. 3-13-18w. Rig.

Ralph Wixson et al No. 1 Gorham Estate, NW NW SW sec. 35-15-16w. Set 8-in. csg. 2,732 ft.; drlg. 2,870 ft.

Wolf Creek Oil Co. et al No. 1 Polifka, SW SW NE sec. 24-13-18w. Wtr. 3,290 ft.; 8-in. csg. 3,463 ft.; drlg. 3,475 ft.

Graham County

Sam Murphy and J. S. Alcorn No. 1 Wemhoff, C NW sec. 27-10-22w. S.D. 2,200 ft.

Noah & Young No. 1 Hills, NW SE sec. 19-10-21w. Anhy. 1,770 ft.; 8-in. csg. 2,825 ft.; wtr. 2,950-60 ft. and 3,100-15 ft.; T.D. 3,144 ft.; U.R.

Grant County

Columbian Fuel Co. No. 1 Gray, C SE sec. 3-29-35w. Set 8-in. csg. 2,500 ft.; 3,000,000 ft. gas, 2,808 ft.; T.D.; milling.

Greenwood County

Dunn & Lewis No. 2 Dawson, C NE NE sec. 27-26-13e. Drlg. 700 ft.

Guy Scott et al No. 1 Pedroja, SE NE SE sec. 6-26-10. Peru sd. 1,675-1,720 ft.; S.O.; fsg. 2,130 ft.

Harvey County

Harburney Oil Co. No. 1 Schrag, NW NW SE sec. 24-22-3w. Set 6⅝-in. csg. 3,118 ft.; T.D. and S.D.

Inca Prod. Co. No. 1 Moore, C NE NE sec. 26-24-3w. R.U.R.

Haskell County

Helmerich & Payne et al No. 1 Larson, C SE sec. 28-28-33w. T.D. 2,978 ft.; P.B. 2,771 ft.; shot.

Helmerich & Payne No. 1 Meredith, C SW sec. 10-30-33w. M.I.R.T.

Kearney County

J. L. Murphy No. 1 Campbell, NW NW SW sec. 32-25-35w. Spd. and S.D.

Kingman County

W. C. McBride, Inc., No. 2-A Wooldridge, NW NE SE sec. 16-27-7w. Chat 3,860 ft. Drlg. 3,933 ft.

Lincoln County

Graham et al No. 1 Smiley, NE NW NW sec. 26-10-9w. Spudded.

Marion County

Harwood Oil Co. et al No. 1 W. H. Mott, NE cor. sec. 2-17-4e. R.R.

Western Kansas Oil & Refining Co. et al No. 1 Hauser, SW cor. sec. 19-19-4. M.I.M.

Ness County

Newton Dev. Co. No. 1 Tenny, NW NW SE sec. 19-18-25w. Anhy. 1,791 ft.; T.D.; lowering 10-in. csg.

Sayre Oil Co. et al No. 1 Ryerse, C NE SE sec. 34-18-21w. Oswald 3,710 ft.; S. S.O. 4,200 ft.; set 7-in. csg. 4,228 ft.; T.D.

Pratt County

H. V. Elwell et al No. 1 Fay, NW NW SE sec. 15-27-14w. T.D. 4,355 ft.; drill pipe stuck.

Indian Territory Illum. Oil Co. and Olson Drlg. Co. No. 1 Bolt, C NW NE sec. 5-29-11w. Set 6-in. csg. 4,060 ft.; T.D. and C.O.

Reno County

Carlock et al No. 1 Brown Realty Co., NW NW NE sec. 32-22-10w. Rig.

Foraker et al No. 1 Hiett, SE SW NE sec. 34-24-4w. Set 5-in. liner. 3,385 ft.; Chat 3,424 ft. (corrected); S.D. 3,540 ft.

Maxwell Oil & Gas Co. No. 1 Clayton, SE SE NW sec. 23-25-7w. Loc.

Page et al No. 1 Mueller, C S½ SW NE sec. 25-24-5w. T.D. 3,827 ft.; D.&A.

Fred Phillips No. 1 Ray, SW SW SW sec. 7-23-8w. Chat 3,703 ft.; T.D. 3,719 ft.; 800 ft. W.I.H.; waiting on rotary.

Pryor & Lockhart et al No. 1 Kerr, C NW sec. 23-23-8w. K.C. L. 3,150 ft.; S.D. 3,640 ft.

Clyde Pulse No. 1 Payne, SW NW NE sec. 4-22-7w. R.U.S.T.

Fred Rust No. 1 Schumacher, SE SE SW sec. 29-22-8w. Viola 3,918-20 ft.; cored to 4,100 ft.; D.&A.

Torry & Feaster No. 1 Schroeder, SE cor. sec. 1-23-7w. B.R.

Rice County

Allison & Fitzwilliam et al No. 1 Foby. NW SW NW sec. 17-19-7w. 12-in. csg. 2,214 ft.; drlg. 2,730 ft.

Buckley No. 1 Bailey, SW SW NW sec. 19-20-6w. Rig.

Charles Petroleum Corp. No. 1 Speck, NW NW SE sec. 29-20-8w. Drlg. 2,793 ft.

Hanna et al No. 1 Brothers, SE SE NW sec. 25-20-8w. Loc.

Sage et al No. 1 Patton, SW cor. sec 5-21-7. Cong. 3,329-37 ft.; H.F.O. and slopping over in 3 hrs.; S.I.

Shell Pet. Corp. No. 1 Gordon, C W half W half NE sec. 21-21-10w. Siliceous 3,435 ft.; D.&A. 3,445 ft.; T.D.

Shell Pet. Corp. No. 1 Maughlin, NE NW SE sec. 11-20-8w. Siliceous 3,235-38 ft.; 36,500,000 ft. of gas at 3,260 ft.; acidized; no gas; T.D. 3,294 ft.; S.I.

John Stark et al No. 1 Doran, NE NE SE sec. 13-19-10w. Sil. 3,291-3,311 ft.; 2,200 ft. O.I.H.; to acid.

W. E. Witt et al No. 1 Wright, NW NW SE sec. 26-19-9w. R.U.

Rooks County

Buckner & Schoff No. 1 McConnel, NE cor. sec. 34-6s-18w. R.U.S.T.

Empire Oil & Ref. Co. No. 1 Ham, SW NW NW sec. 24-8-19w. R.U.S.T.

L. C. D. Drlg. Co. et al No. 1 Westhusin C NE SE sec. 11-9-17w. 8-in. 2,691 ft.; drlg. 2,910 ft.

J. H. Lester No. 1 Methene, SE SE NE sec. 29-10-20w. Topeka 3,250 ft.; fsg. 3,366 ft.

J. A. Shoemake No. 1 Stebbins, NE NE SW sec. 26-7-17w. T.D. 3,591 ft.; P.B. to 2,976 ft.; 2,500 ft. fluid in hole.

Rush County

C. L. Sheedy No. 1 Bison, SW cor. sec. 35-16-17w. Anhy. 1,140 ft.; drlg. 1,690 ft.

Russell County

Braden & McClure No. 1 Herbel, NE NE

NW sec. 35-14-14w. Gorham sd. 3,165-68 ft.; set 5-in. 3,164 ft.; potential 220 bbls. oil; installing pmpg. unit.

Coralena Oil Co. No. 1 L. A. Sellens, NW cor. sec. 17-15-13w. Topeka L. 2,620 ft.; T.D. 2,881 ft.; P.B. 2,800 ft.; acd.; no pay; to deepen.

El Dorado Ref. Co. No. 1 Scott, NW NW NE sec. 17-13-13w. S.D. 835 ft.

R. C. Tarrant No. 1 Williamson, SE SE NW sec. 9-14-14w. Tarkio L. 2,515 ft.; T.D. 2,550 ft.; swabbed 5 B.P.H. and showing of wtr.; acidized with 1,000 gals.; made potential of 243 bbls. of oil; comp.

Joe Aylward et al No. 1 McAllister, NE NE SE sec. 9-12-13w. Anhy. 811 ft.; 8-in. csg. 2,420 ft.; drlg. 2,895 ft.

Saline County

Brouk et al No. 1 Othelander, NE NW SE sec. 10-16-3w. R.U.

Ryan Consolidated Co. & Archer No Norton, NE cor. sec. 32-14-2w. Simpson 3,412 ft.; T.D. 3,426 ft.; rng. tbg.

Sedgwick County

D. R. Lauck No. 1 McLean, SW SW SE sec. 1-27-1w. Siliceous 3,613 ft.; wtr 3,755-68 ft.; T.D. 4,123 ft. (cor.); lost bit; fsg.

R. J. Wallace et al No. 1 Scheer, SW cor. sec. 22-27-3w. S.O. 3,145 ft.; base K.C. L. 3,265 ft.; cemented back to 3,016 ft.; W.O.C.

Smith County

Heimerich & Payne, No. 1 Meyer, C NE SW sec. 10-5-11w. Rotary rig.

Stafford County

Indian Terr. Illum. Oil Co. and Empire O. & R. Co. No. 1 Mellies, C N½ N½ NE sec. 6-22-11w. 8-in. csg. 3,006 ft.; Lansing 3,170 ft.; S.O. 3,255-60 ft.; drlg. 3,280 ft.

Skelly Oil Co. et al No. 1 Kipp, SE SE NE sec. 27-25-14w. Gas 3,707 ft.; inc. to 800,000 ft. at 3,725-27 ft.; drlg. 3,824 ft.

C. E. Skiles No. 1 Leidigh, NW NW SW sec. 21-22-11w. Anhy. 563 ft.; 10-in. csg. 1,868 ft.; drlg. 1,965 ft.

Sumner County

S. J. Buffington No. 1 Payne, C SW NE sec. 10-35-2e. Sand 1,544-45 ft., T.D.; est. 1,000,000 ft. gas; set 5-in. csg.

Empire O. & R. Co. No. 1 Hoffman, NW NW SW sec. 27-34-1e. Bldg. rig.

Hapenny & Green et al No. 1 Evers, SE SE NE sec. 27-31-2. Drlg. 508 ft.

Matthews & Derrington No. 1 Berry, NW NW SE sec. 14-35-1. Big L. 3,712 ft.; Simpson 3,753 ft.; S.D. 3,780 ft.

W. C. McBride, Inc. & Olson Drilling Co. No. 1 Kinlund, NE NW NE sec. 24-34-1. R.U.

Pryor & Lockhart No. 1 McCowen, NE NE SW sec. 18-32-1w. Wilcox 4,151-84 ft.; Sil. 4,241 ft.; T.D. 4,276 ft.; S.D.O.

Rose Spring Drlg. Co. et al No. 1-A Rutter, C NW NW sec. 21-33-2e. Spudded.

Texas Co. No. 1 Reed, NE SE SE sec. 11-31-1w. Drlg. 4,027 ft.

Trego County

J. J. Hall et al No. 1 Deines, SE SE SE sec. 12-13-24w. Set 6-in. csg. 4,409 ft.; Miss. 4,410 ft.; H.F.W. 4,470-80 ft.; U.R. 6-in. csg.; T.D. 4,500 ft.

R. B. McNeely et al No. 1 Lemke, NW NW SW sec. 7-11-22w. T.D. 3,740 ft.; 5-in. csg. at 3,564 ft.; M.I.R.

G. M. Piggott, Inc. et al No. 1 Burkett C SW sec. 15-11-22w. Wtr. 3,640-50 ft.; S.O. 3,660-63 ft.; S.D. 3,702 ft.

York State Oil Corp. No. 1 Gugler, SW cor. sec. 36-12-21w. Acd. 3,256 ft.; wtr.; no oil; T.D. 3,450 ft.; S.D.

Woodson County

N. C. Dunn No. 1 Dawson, C NW NE sec. 27-26-13. L. 1,505 ft.; T.D. 1,527 ft.; D.&A.

Holmes et al No. 1 Holmes, SE NE NE sec. 25-25-14e. S.O.&G. 1,456 ft.; T.D. 1,492 ft.; D.&A.

Ladd et al No. 1 Lauber, NW cor. sec 4-25-14e. T.D. 1,072 ft.; D.&A.

H. H. Diamond No. 1 fee, SE cor. sec. 30-6-8. Cellar and pits.

Sands Pet. Co. No. 1 Harvey, SE cor. sec. 21-3-5. Sdy. L. 103-08 ft. and 161-66 ft.; S.S.O. sd. and L. 232-334 ft.; T.D. 640 ft.; S.D.

Seminole County

Amerada Pet. Co. No. 1 Varhola, NE NW NW sec. 36-10-7. Drlg. 2,490 ft.

H. E. Kennedy No. 1 Bowlegs, NW NW SE sec. 3-8-7. Loc.

Al Spears No. 1 Keaton, NW cor. sec. 6-5-8. Bldg. rig.

Texas County

Allison & Barnhill No. 1 Bingley, SE SE NE sec. 30-2n-18. (Cimmaron Meridian) Sand 1,037-47 ft.; and 1,100-1,123 ft.; drlg. 1,220 ft.

Jefferson County

A. T. Campbell No. 1 Trout, SE NE NE sec. 6-8s-7w. Moving in machine; T.D. 2,212 ft.; lost bailer; fsg.

Mid-Continental Oil Co. No. 1 Reid, C SW NW sec. 32-6s-4w. Spudded.

Pearson et al No. 1 Douthitt, NE cor. sec. 24-6s-9w. Drlg. L. 3,854 ft.

Twin State Oil Co. No. 1 Brown & Majors, SW SE NW sec. 21-5s-6w. Loc.

Love County

Amerada Pet. Corp. No. 1-A Westheimer & Daube, SW SE SW sec. 27-6s-2e. T.D. 7,363 ft.; P.B. 2,970 ft.; perforated csg. at 1,539-99 ft. and 2,095-2,115 ft.; cmtd. perf.; flwd. 22 bbls. in 24 hrs. and "went dead"; S.D.O. Aug. 4.

W. H. Riddle et al No. 1 Johnson, C SW SE cor. sec. 20-8s-2w. T.D. 4,009 ft.; to deepen.

Sinclair Prairie Oil Co. No. 1 Stockton, SE SE SW sec. 26-6s-2w. T.D. 8,583 ft.; cut 5-in. csg. at 7,109 ft.; P.B. to 6,927 ft.; W.O.C.

Marshall County

Heimrich & Payne No. 1 Taliaferro, NW SE SW sec. 26-5s-5e. Drlg. sh. 5,965 ft.

Magnolia Pet. Co. No. 1 Gardner, NE NE NW sec. 34-6s-6e. Bldg. drk.

Stephens County

Coline Oil Co. No. 1 Johnson, SW SE NE sec. 1-2n-8w. R.U.R.

W. G. Endicott et al No. 1 McFatridge, NW NW SW sec. 11-3s-9w. T.D. 1,515 ft D.&A.

Ed Parson No. 1 Olson, C SW SW sec. 21-2-8w. Drlg. bk. L. 3,555 ft.

Tillman County

Beal & Toler No. 1 Magill, SE SE SE sec. 18-1n-16w. Granite wash 565 ft.; S.O. 587 ft.; drlg. 592 ft.

Rochelle Bernheimer No. 1 Tate, NE NE NW sec. 16-1s-19w. T.D. 3,001 ft.; S.D. for orders.

Indian Territory Illuminating Oil Co. No. 1 Drumm, C SW NW sec. 32-2s-17w. Loc.

Johnson, Young & Mitchell No. 1 Donahoe, SW NW NW sec. 7-4s-17w. T.D. 3,211 ft.; D.&A.

Lynn Oliver No. 1 Rilling, SE SE NW sec. 22-1s-15w. Granite Wash 775 ft T.D. 1,030 ft.; cmtd. core at 730 ft.; W.O.C.

D. S. Smith No. 1-A Hammill, NE NE NW NW sec. 6-5s-15w. T D. 2,425 ft.; S.D.

OKLAHOMA

Week Ending October 10

NORTHERN OKLAHOMA

Beckham County

Mid-American Oil Co. No. 1 Biscoe, SW SW SW sec. 28-8-22w. Drlg. 920 ft.

Caddo County

Wasteka Oil Co. No. 1 Griffin, SW SE NE sec. 27-6-10w. T.D. 6,570 ft.; P.B. to 5,400 ft.; cutting 6⅝-in. csg.

Cleveland County

W. R. Hollenbeck No. 1 Stinson, NW NW NE sec. 17-9-2w. Rig.

Coal County

Carter Oil Co. et al No. 1 Warne, NE NE NW sec. 31-3-9. Drlg. 1,600 ft.

Continental Oil Co. No. 1 Breedlove, NW SW SW sec. 24-1-8. Cg. sh. and sdy sh. 2,611-87 ft.

Continental Oil Co. No. 1 Daniels, SW NE SW sec. 27-1-9. T.D. 650 ft.; W.O.C.

Continental Oil Co. No. 1 King, NE SW NE sec. 26-1-8. Hunton 4,354 ft.; S.O. 4,358 ft.; cg.

Continental Oil Co. No. 1 W. Kirby, SW SE SW sec. 23-1-8. T.D. 1,692 ft.; shot with 30 qts. at 1,664 ft.; to set 9-in. csg.

Sinclair Prairie Oil Co. No. 1 Culver, NE NE SW sec. 16-1-8. Cd. 5,491-5,609 ft.; in L. sd., sdy. Dolomite and chert; S.S. O.&G.

Garfield County

Ohio Oil Co. No. 1 Smythe, NE NE SW sec. 23-22-4w (Wilcox sd. test). Layton 4,010 ft.; S.S.O.&G.; drlg. 4,340 ft.

Garvin County

Ellison & Hammond No. 1 Selby, C SE NW sec. 24-2n-3w. R.U.R.

R. F. Lundy No. 1 Prince, NE NE SE sec. 21-1-2w. Base McLish 2,615 ft.; drlg. 2,780 ft.

C. A. Luttrell et al No. 1 Howell, NW SE NW sec. 34-1-1. T.D. 160 ft.; S.D.

Pure Oil Co. No. 1 Baker, NE cor. sec. 7-2-1e. R.U.R.

Tide Water Oil Co. et al No. 1 Sturtevant, NE NE NW sec. 28-4-1e. Simpson 4,148 ft.; cd. 4,160-4,235½ ft. in Dolomitic and cherty L. and sh.

Grady County

Art Holt et al No. 1 Ramsey, NE SE NE sec. 35-5-8w. Drk.

Ray Stevens No. 1 Mays, NE cor. sec. 1-3-8w. T.D. 6,028 ft.; Schlumberger; S.D.O.

Hughes County

McAdams & Barnes No. 1 Koch, SW NE NE sec. 1-9-10. T.D. 3,835 ft.; P.B. to 2,600 ft.; whipstocking 2,900 ft.; P.B. with 200 sacks; W.O.C.

McAdams & Barnes No. 1 Long, SE NE NW sec. 29-9-9. Drlg. 3,130 ft.

Mid-West Oil Co. No. 1 Turner-Lucas, C SE NW sec. 13-9-9. Rig.

Rialls et al No. 1 Montgomery, NW SW NW sec. 7-9-9. Crom. 3,472-94 ft.; T.D. 3,540 ft.; 5-in. csg. run to 3,472 ft.; not cmtd.; will S.D.

Southern Oil Co. No. 1 Buck, C NW SW SW sec. 21-8-10. R.U.S.T.

Kay County

W. O. Allen No. 1 Fulton, SE cor. sec. 18-27-4. Sd. 2,186-2,320 ft.; Oswego 2,985 ft.; Miss. 3,252 ft.; T.D. 3,316 ft.; D.&A.

Denver Prod. & Ref. Co. No. 1 School, SE NW NE sec 13-26-1w. Wilcox 4,123 ft.; T.D. 4,141 ft.; P.B. to test Oswego; bailed to bottom; S.S.O.&G.; 500 ft. W.I.H.; D.&A.

Max Kelley No. 1 Johns, NW NW NW sec. 35-27-4. Sd. 940-55 ft.; H.F.W.; S.D. for pipe, 955 ft.

Robert Wilson et al No. 1 Dickerson, NE NE SW sec. 20-29-1w. Miss. 3,592 ft.; S.S.O. 3,615-25 ft.; S.S. wtr. 3,630-40 ft.; drlg. 3,810 ft.

Kiowa County

Argus Pet. Co. No. 1 Osbourne, NW cor. NE sec. 9-7-16w. T.D. 895 ft.; fsg.

Burns & Moore No. 1 Block, NW NE SW sec. 31-6-16w. S.D. 50 ft.

R. O. Houlbelt No. 1 Pfenning, SE NW SE sec. 35-7-17w. Machine.

Lykins et al No. 1-A Aetna Life, SE cor sec. 8-5-16w. T.D. 530 ft.; drlg. by tools.

Pendleton & Vaughn No. 2 R. E. Hobb, C E½ NW SW sec. 7-6-16w. T.D. 425 ft.; S.D.

Pendleton & Vaughn No. 3 Smart, SE NW SE sec. 12-6-17w. Sdy. L. 454-64 ft.; T.D. 470 ft.; est. 5 bbls.; to acidize.

Rush C. Roberts No. 1 Funkhouser, SE cor. NW NW sec. 25-7-17w. Drlg. 125 ft.

Travis & Scott No. 1 Doyle, NE SE SW sec. 21-5-17w. T D. 937 ft.; S.D.

J. M. Young No. 1 Cooke, NE NE NW sec. 33-2-16w. Drlg. 270 ft.

Le Flore County

McCraw et al No. 1 Tidwell, C NW SE sec. 17-3-22. Pull 10-in. csg.; T.D. 1,900 ft.; set 10-in. csg.; S.D. for wtr.

Lincoln County

Fleetborn Oil Corp. No. 1 Turner, NW NW SE sec. 28-17-5. Loc.

Skelly Oil Co. No. 1 Sporn, NW NE SW sec. 21-17-3. T.D. 4,546 ft.; to deepen.

Logan County

Anthony & Marshall No. 1 Fruin-Eckman, SE SE SW sec. 4-16-1e. T.D. 5,285 ft.; bailing and C.O.

Heimerich & Payne et al No. 1 Hasler NW NW SE sec. 14-16-4w. Drlg. 2,250 ft.

McIntosh County

Stanolind Oil & Gas Co. et al No. 1 Tiger NW NW SW sec. 13-9-15. T.D. 1,650 ft.; W.O.C.

Murray County

Power Oil Co. No. 1 Lancaster Trust Co., C SW NE sec. 10-1s-2e. Set 10-in. csg. 252 ft.; T.D. 1,710 ft.; S.D.

Osage County

Chavalier & Simon No. 1 Osage, SE cor sec. 24-23-9. R.U.

Nerbia Oil Co. No. 1 Osage, NE NE SW sec. 13-23-6. Loc.

Pittsburg County

Okla. Dist. Oil Co. No. 1 Beeler, NE NE SW sec. 7-7-14. T.D. 2,904 ft.; drill pipe in hole; cmtd. crevice with 300 sacks; fsg. for drill pipe.

Pontotoc County

Caloma Oil Corp. No. 1 Brentz, SE NE SW sec. 4-1-6. R.U.R.

SOUTHERN OKLAHOMA

Atoka County

A. J. Sanders No. 3 Redden, SE SW SW sec. 19-1n-15e. T.D. 715 ft.; S.D.

Shell Pet. Corp. No. 4 Hill-A, NW sec. 30-3-10. Drlg. 2,275 ft.

Carter County

Read & Straus No. 1 J. Lile, SW cor. SE SE sec. 8-5s-1e. Drlg. 582 ft.

Texas Co. et al No. 1-B Cathey, SE NE NE sec. 6-5s-1w. O.W.D.D.; sd. 4,354-55 ft.; swbd. 330 bbls. in 15 hrs.; T.D 4,559 ft.; P.B. to 4,410 ft. Acidized; pmpd. 20 bbls. in 6 hrs.

Comanche County

L. D. Wise No. 1 Cones, SE SE SW sec. 11-1n-10w. Drlg. sh. 1,450 ft.

Cotton County

English Drlg. Co. No. 1 Wilson, NW NW SE sec. 7-4s-7w. Tools moved out; T.D 1,514 ft.

Phillips Pet. Co. No. 1 Warren, C NE NE SE sec. 1-5s-13w. Sd., showing gas 2,138-39 ft.; drlg. sh. 2,150 ft.

Harmon County

Lisalko Trust, Ltd., No. 1 Crosnoe, SW SE SW sec. 14-3n-25w. Drlg. 2,980 ft.; bk. L. and sh.

Jackson County

C. P. Burnham No. 1 Oliver, NW NW SE sec. 26-1-20w. T.D. 2,368 ft.; abd.

ARKANSAS

Bradley County

Joe Modisette No. 1 Bird, N half NW NE sec. 28-16-12. 10-in. set 850 ft. W.O.C.S.

Clark County

John G. Wooten No. 1 Z. T. Sparkman, sec. 1-11-20. S.D. 20 ft.

Columbia County

Buford & Co. No. 1 Kendrick, 330 ft. S and E. NW cor. SE¼ sec. 7-19-18. Drlg. 4,164 ft.

Dallas County

Walter Lown No. 1 G. Atkinson, NE NW SE sec. 7-10-13. 12-in. cmt. 76 ft.; W. O.C.S.

Hempstead County

Easton et al No. 2 Conway-Tiller, 330 ft. N and E, SW cor. SW sec. 34-12-27. S.D. 3,001 ft., high water.

Imperial Oil & Gas Prod. Co. No. 1 Foster Est., sec. 35-12-26. Cg. 2,587 ft.

Lewis Hays No. 2 State of Ark. (Red River bed), SE cor. sec. 18-14-25. Cmt. 10-in. 180 ft. W.O.C.S.

Spooner et al No. 2 Lafferty, sec. 17-14-24 Tstg.; running 4-in. csg. T.D. 2,500 ft.; S.W. and abnd.

Stewart Oil Co. No. 1 fee, sec. 31-12-23. Drlg. 1,624 ft.

Little River County

Joe Strahan No. 1 Dierks, SW SE sec. 21-12-28. Drlg. 25 ft.

Miller County

Erwin & Leach No. 1 Red River Farms, sec. 2-17-26. 10-in. set; cmt. 447 ft.; W.O.C.S.

C. V. Lenz No. 7 Dale, O.W.D.D., sec. 24-15-26. Drlg. 3,850 ft.

McClanahan et al No. 1 Miller Ld. & Lbr. Co., SW cor. sec. 2-18s-28w. Cg. 6,153 ft.

Odell Hinson No. 1 Montana Realty Co., 330 ft. S and W NE NW NW sec. 3-17-28 Cg. 5,180 ft.

Nevada County

Benedum & Trees No. 1 Groves, C N half SE NW sec. 10-14-20. T.D. 2,285 ft.; shows 2,276-85 ft.; testing.

L. M. Glasco No. 1 Ritchie Est., NW NW SE sec. 10-14-20. Drk.

Steel & Warmack No. 1 Wm. Haynil, SE SE NW sec. 6-14-21. S.D. 200 ft.

Union County

Penn-Ark. Corp. No. 1 W. N. Raulston, 330 ft. S and E. NW NW SE sec. 12-17-14. T.D. 1,146 ft.; S.D. on matl.

S.H.O. Oil Corp. No. 1 H. D. Warren, O.W.D.D., NE SW SW sec. 10-17-14. Drlg. 3,338 ft.

LOUISIANA

NORTH LOUISIANA PROVEN

Caddo-Rodessa

American Lib. Oil Co. No. 3 Norton, NE cor. sec. 17-23-15. Drlg. 5,662 ft.

Ark.-La. Gas Co. No. 2 Teamer, NW SE SW sec. 13-23-16. Prep. shoot offset csg.; T.D. 6,067 ft.

Blackwell O. & G. Co. No. 2 Wynn, sec. 8-23-15. Drk.

J. G. Collins No. 2 Caddo School Bd., sec. 8-23-15. R.U. and S.D.

W. C. Feazel and Kauns No. 1 Wynn, SE SW NE sec. 8-23-15. M.I.

W. C. Feazel and Kauns No. 2 Wynn, SE SW NE sec. 8-23-15. 10-in. set 2,201 ft.; W.O.C.S.

David L. Harlin No. 1 W. D. Norton, NW cor. sec. 22-23-15. Loc.

Idessa Oil Co. No. 1 D. K. Sumner, NW SW SE sec. 10-23-15. Drlg. 5,275 ft.

J. Edward Jones No. 1 M. Z. Sharp, 1,227 ft. N. 330 ft. E, SW cor. SE¼ sec. 4-23-16. R.U.

La. Oil Rft. Co. No. 4 Ratcliff, NW cor. sec. 16-23-16. Drlg. 3,900 ft.

Lion Oil Ref. Co. No. 3 Wynn, SW cor. sec. 9-23-15. Drlg. 5,232 ft.

Lion Oil Ref. Co. No. 4 Wynn, 330 ft. N, 990 ft. E, SW cor. sec. 9-23-15. Drlg. 4,800 ft.

Louisian Oil Ref. Co. No. 2 Ratcliff, NW cor. sec. 16-23-15. 7-in. cmt. 5,988 ft.; T.D. 6,021 ft.; W.O.C.S.

Louisiana Oil Ref. Co. No. 3 Ratcliff, NW cor. sec. 16-23-15. Cg. 6,023 ft.

Magnolia No. 8-A Caddo Lv. Bd., NW SW NE sec. 21-23-16. Cg. 5,983 ft.

Magnolia No. 6 Tyson, NE cor. sec. 13-23-16. Comp., flw. 10 B.P.H., 3/16-in. tbg. ck.; T.D. 6,036 ft.

McAlester Fuel Co. No. 1 W. M. Mitchell, SW cor. sec. 20-23-16. 7-in. cmt. 6,015 ft.; T.D. 6,025 ft.; W.O.C.S.

McAlester Fuel Co. No. 2 N. S. Tyson, C sec. 22-23-16. Rg. short; sg. 5-in.; T.D. 6,016 ft.

Magnolia No. 9-A Caddo Levee Bd., SW SE NW sec. 21-23-16. Drlg. 4,000 ft.

Magnolia No. 3 N. S. Spearman, 1,013 ft. Comp., flw. 8 B.P.H., ¼-in. tub. ck.; T.D. 6,082 ft.; P.B. 6,475 ft.

R. W. Norton No. 1 Starke, SE SW sec. 16-23-16. Drk.

Phillips No. 1 Rose McDonald, NW SW

NE sec. 17-23-16. 7-in. cmt. 6,054 ft.; T.D. 6,088 ft.; W.O.C.S.

Phillips Pet. Co. No. 7 Norton, NE SE NW sec. 17-23-15. Drlg. 5,314 ft.

Phillips Pet. Co. No. 2 Rose McDonald, NW S½ NE sec. 17-23-15. 16-in. cmt. 256 ft.; W.O.C.S.

Phillips No. 1 Wilbanks, NE SW SW sec. 8-23-15. Cg. 5,955 ft.

Phillips Pet. Co. No. 4 Cora Woods, SE NW NE sec. 17-23-15. Drlg. 4,200 ft.

Red Iron Drlg. Co. No. 1 Means, 330 ft. N and E, C sec. 9-23-15. Comp.; flw. 10 B.P.H. dist. and 15,000,000 ft. gas, ⅝-in. tbg. ck.; T.D. 6,005 ft.

Snowden & Anding No. 2 Taylor, Lot 7, Blk. 46, sec. 23-23-16. Comp.; flw. 6 B.P.D. dist. and 5,000,000 ft. gas, 20/64-in. tbg. ck.; T.D. 5,955 ft.

United Gas No. 5 Brewer Unit, SE SW NW sec. 21-23-16. Loc.

United Gas No. 7 Brewer Unit, SW cor. sec. 22-23-16. 7-in. cmt. 5,968 ft.; T.D. 5,990 ft.; W.O.C.S.

United Gas No. 8 Brewer Unit, 33 ft. N, 588 ft. W, C sec. 22-23-16. Drlg. 3,600 ft.

United Gas No. 3 Lee 574, NE SE sec. 16-23-16. Cg. 5,950 ft.

United Gas No. 24 Rodessa Oil & Ld. Co., SE NW SE sec. 17-23-16. Drlg. 3,400 ft.

United Gas No. 25 Rodessa Oil & Ld. Co., NE NW NE sec. 22-23-16. Drlg. 2,810 ft.

United Gas No. 4 W. B. Spearman, NE SW sec. 22-23-16. Comp.; flw. 16 B.P.H., ⅜-in. tbg. ck.; T.D. 5,985 ft.

United Gas No. 5 W. B. Spearman, NW SW sec. 15-23-16. Loc.

United Gas No. 6 N. S. Spearman, 600 ft. S, 650 ft. E, NW cor. sec. 18-23-15. 9-in. cmt. 2,205 ft.; drlg. 5,121 ft.

United Gas No. 7 N. S. Spearman, SW cor. sec. 7-23-15. Drlg. 4,565 ft.

N. LOUISIANA WILDCATS

Bienville Parish

W. V. Bowles et al No. 1 Bank of Ringgold, sec. 3-15-9. T.D. 5,039 ft.; D.S. 5,998 ft.; S.W.; P.&A.

DeSoto O. & G. Co. No. 1 Dunn and Olsen, C N½ NW¼ sec. 15-16-10. T.D. 2,800 ft.; S.D. for repairs.

J. W. Leonard No. 1 Courtney, 330 ft. N and W, SE cor. sec. 5-17-7w. Cg. 7,313 ft.

Rondeau et al No. 1 Locke, NE cor. sec. 19-15-10. S.D. 605 ft.

Bossier Parish

Ark-La Gas Co. No. 1 J. G. McDade, NW cor. sec. 8-17-11. Drlg. 2,035 ft.

Geo. H. Bringhurst et al No. 2 Buckley, 1,000 ft. N, 330 ft. W, SE cor. sec. 35-21-13. S.D. 2,160 ft.

Premier Inv. Co. No. 31 Wyche, NE NW NW sec. 14-19-11. Comp.; T.D. 421 ft.; pumped 18 B.P.D.

Premier Inv. Co. No. 32 Wyche, sec. 14-19-11. T.D. 423 ft.; comp., pumped 23 B.P.D.

Premier Inv. Co. No. 33 Wyche, SE NW NW sec. 14-19-11. Drlg. 50 ft.

Tidwell et al No. 1 Nattin, 200 ft. S and W, C sec. 15-23-14. Hole clean; S.D.; T.D. 2,954 ft.

United Gas No. 1 Roos, NW cor. sec. 23-17-12. Drlg. 3,309 ft.

United Gas No. 1-F H. L. Skannal, 660 ft. S, 2,640 ft. W, NE cor. sec. 26-17-12. D.S. tests show oil and 10,000,000 ft. gas; T.D. 5,190 ft.; S.D.

Caddo Parish

C. C. Crews No. 2 Pender NW SW sec. 11-20-15. Drlg.

W. D. Chew No. 1-D Levee Bd., NW SE NE sec. 34-21-16. Loc.

W. D. Chew No. 2 Levee Bd., NE cor. sec. 5-20-16. Loc.

Gulf Ref. Co. No. 1 E. P. Hatcher, 660 ft. N and E, SW cor. SE¼ sec. 11-17-15. Cg. 6,040 ft.

J. B. Hutchinson No. 2 Storey-Phillips, SW cor. NE NW sec. 28-16-13. Drlg. 2,064 ft.

Innerstate Drlg. Co. No. 1 E. Smith, SW SE SW sec. 35-21-15. Acidized; testing; T.D. 1,628 ft.

Juan et al No. 1 P. Hobbs, SE cor. NW NW sec. 28-21-15. T.D. 1,672 ft.; W.O.S.R

Maja Oil Co. No. 1 Mathew, NE SE sec. 10-20-15. T.D. 2,204 ft.; W.O.S.R.

Morefield & Prine No. 3 Stokeley, sec. 5-20-16. Drlg.

Prairie River Synd. No. 1 Hutchinson, 330 ft. N and E, SW NW sec. 15-15-12. Cg. 6,915 ft.

Simplex No. 5 Natalie, SE W½ SE sec. 10-20-15. Drlg. 1,520 ft.

Stanolind O. & G. Co. No. 109, NE cor. sec. 14-21-15. Pumped 20 B.P.D.; comp.; T.D. 1,682 ft.

Stanolind O. & G. Co. No. 110, NE cor. 14-21-15. 7-in. cmt. 1,465 ft.; T.D. 1,490 ft.; W.O.C.S.

Stanolind O. & G. Co. No. 111, NE cor. sec. 14-21-15. Drlg.

F. L. Luckett No. 1 Connell, NE sec. 10-20-15. Drlg. 970 ft.

Stewart-Williams No. 3 Iron, SW NE 10-20-15. 6-in. cmt. 2,175 ft.; W.O.C.S.

Caldwell Parish

Crickett & Woods No. 1 fee, NW SE NE sec. 18-11-3. Drlg. 1,425 ft.

Claiborne Parish

E. T. Oakes No. 1 H. W. Patton, NE cor. sec. 1-20-5. Cg. 5,044-60 ft.; claim shows oil.

United Gas Public Service Co. No. 2 Durfett, 660 ft. N and 1,980 ft. E, SW cor. sec. 31-20-5. T.D. 8,616 ft., fshg. for D.P.

United Gas No. 1 A. P. Taylor, SE cor. sec. 5-19-5. Drlg. 3,157 ft.

De Soto Parish

R. Kamon No. 1 Roscoe, SE NW sec. 14-12-13. Set 7-in. at 1,080 ft.; drlg. 1,574 ft.

W. C. Nabors No. 1 fee, C NE¼ sec. 8-12-13. S.D. 1,217 ft.

R. C. Payne No. 1 Harris, sec 11-13-14. Drlg. 2,490 ft.

T. W. Simmons No. 1 Johns, 330 ft. N, 990 ft. W cen. sec. 20-14-16. Drlg. 2,000 ft.

Franklin Parish

S. C. Jensen No. 1 Dailey, sec. 12-11-6. S.D. 2,285 ft.

Grant Parish

Arcadia Oil Co. No. 4-B Swope, 330 ft. N of No. 2-B, sec. 17-9-1e. Loc.

Grant Oil Co. No. 1 Swope, SW N½ NE SW sec. 17-9-1e. Drlg. 1,005 ft.

Pet. Prod. Co. No. 1 Buffington, SE NE sec. 18-9-1. Drlg. 1,605 ft.

Perry et al No. 1 Barrett, 150 ft. N and W, SE NE SE sec. 17-9-1e. 6-in. cmt. 1,583 ft.; W.O.C.S.

Rogers Oil No. 2 Swope, SW NW SW sec. 17-9-1e. 7-in. perf. on bottom; T.D. 1,604 ft.; testing.

LaSalle Parish

H. L. Hunt No. 8 Urania, NE SW NW sec. 25-16-1. T.D. 1,542 ft.; W.O.S.R.

Urania Oil & Gas No. 1 Urania, NW cor. sec. 7-10-2. S.D. 300 ft.

Morehouse Parish

So. Carbon Co. No. 17 Tensas, NE cor. sec. 4-20-4. Drlg.

United Gas No. 42 Crossett, SE cor. sec. 25-22-4e. Rg. 5-in.; set 2,114 ft.; W.O.C.S.

United Carbon Co. No. 6 Stovall, SE cor sec. 28-21-4. Cmt. 6-in. 2,080 ft.; W.O.C.S.

United Carbon Co. No. 7 Stovall, NW cor. sec. 27-21-4. R.U.

Natchitoches Parish

Ivan A. Allen No. 1 Simpson, sec. 12-7n-7w. T.D. 50 ft. S.D.

C. D. Morrison No. 1 Moffitt, 250 ft. N, 250 ft. W, SE cor. sec. 19-10-10. 10-in. set 110 ft.; W.O.C.S.

Union Pet. Co. No. 2 DeBlieux, 2,395 ft. E, 150 ft. S of W cor. sec. 33-10-7w. T.D. 3,354 ft.; S.D. for wtr.

Ouachita Parish

Carbons Con. No. 1 Burt, NE cor. SE sec. 35-19-3e. Drlg. 1,310 ft.

Red River Parish

Byrd Exp. Co. No. 1 Edge, SW NE sec. 29-13-11. Hole clean; T.D. 2,499 ft.; W. O.S.R.

W. J. Hunter No. 1 Long Bell Lbr. Co., sec. 19-13-9. Drlg. 3,422 ft.

Perla Oil Co. No. 1 DeLong, 330 ft. S and E, C sec. 33-12-10. R.U.

G. T. Shaw No. 4 Wilkinson, NE NW NW sec. 3-12-10. Cg. 1,022 ft.

Richland Parish

Gulf Ref. Co. No. 15 R. R. Rhymes et al. sec. 32-17-6e. Drlg. 7,505 ft.

Sabine Parish

Arcadia Ref. No. 1 Henderson, NE SE SE sec. 30-9-13. 7-in. cmt. 1,632 ft.; T.D. 1,750 ft.; W.O.C.S.

M. C. Forsman No. 1 Patrick, NE SW sec. 21-9-13. W.O.S.R.

F. G. Cox No. 1 Whitney Corp., C NW NE sec. 8-9-13. Shows of oil; prep. to test; T.D. 5,503 ft.

Ellis Prod. Co. No. 1 Small, SE NW SE sec. 24-7-11. 6-in. cmt. 2,682 ft.; W.O. C.S.

J. R. Keen No. 1 Long Bell, 276 ft. N and 288 ft. W, SE cor. NE SW sec. 5-18-13. Acidized; W.O.S.R.

Posey Sisters Oil Co. No. 3 Burkett, NE cor. sec. 10-9-13. S.D. 3,162 ft.

A. H. Tarver No. 2 Baker, NW cor. NE sec. 36-8-12. Drlg. 5,240 ft.

J. J. Watson No. 2 Reneau, NE SE SW sec. 29-9-13. W.O.S.R.

Union Parish

Federal Pet. Co. No. 1 fee, 330 ft. S and W, NE cor. sec. 34-31-3e. P.B. 7,021 to 2,408 ft.; comp. 3,000,000 ft. gas.

Innerstate Natl. Gas Co. No. 55, SE cor sec. 5-20-4. Comp. 8,000,000 ft. gas; T.D. 2,150 ft.

Innerstate Natl. Gas Co. No. 53 fee, SE cor. sec. 31-21-4. Cmt. 6-in. 2,070 ft.; W.O.C.S.

So. Carbon Co. No. 69 fee, 660 ft. S and E, NW cor. sec. 9-21-4e. 6-in.; comp. 7,000,000 ft. gas; T.D. 2,144 ft.

So. Carbon Co. No. 12 Grayling, NE cor. sec. 29-21-4e. 8-in. cmt. 750 ft.

So. Carbon Co. No. 13 Grayling, SE cor. sec. 5-21-4e. Loc.

So. Carbon Co. No. 14 Grayling, SE cor. sec. 5-21-4e. Loc.

So. Carbon Co. No. 15 Grayling, SW cor. sec. 4-21-4e. Loc.

Webster Parish

W. D. Ambrose No. 1 T. Crichton, 330 ft. N and E, SW cor. SW NW sec. 36-18-9 Comp.; Ga. est. 50,000,000 ft. gas, some distillate; T.D. 5,770 ft.; P.B. 5,875 ft.

Magnolia Pet. Co. No. 5 J. Cox, SW SE sec. 23-21-10. Drlg. 3,444 ft.

R. W. Norton No. 2 Josey & Masey, C W½ NE NW sec. 27-21-10. Clearing loc.

Red Hawk Oil Co. No. 1 Mayfield, sec. 9-23-9. 10-in. set 90 ft.; W.O.C.S.

Ohio Oil Co. No. 1 R. M. Coyle, NE SE sec. 22-21-10. Drlg. 3,963 ft.

Ohio Oil Co. No. 1 Bodcaw Lbr. Co., C NE SE sec 28-21-10. Drlg. 5,112 ft.

United Gas No. 2 Davis, 660 ft. S and E, NW cor. sec. 23-21-10. Drlg. 2,335 ft.

United Gas No. 1 Mixon, SE SW sec. 22-21-10. Drlg. 4,612 ft.

Woodley Pet. Co. No. 2-A L. C. Cox, SW NE sec. 22-21-10. Drlg.

Woodley Pet. Co. No. 2-B L. C. Cox, cen. SW SW sec. 23-21-10. Drlg. 630 ft.

Woodley Pet. Co. No. 4-B Gray, cen. NE NE sec. 27-21-10. Drlg. 4,612 ft.

SOUTH LOUISIANA FIELDS

Black Bayou—Cameron Parish

Shell Pet. Corp. No. 35 Watkins, sec. 8-12s-12w. Cg. sh. 4,527 ft.

Caillou Island—Terrebonne Parish

Texas Co. No. 39 State, sec. 17-23s-20e. T.D. 4,145 ft.; P.B. 3,100 ft.; sdtkd.; drlg. 3,036 ft.

Texas Co. No. 45 State, sec. 20-23s-20e. Drlg. sh. 2,870 ft.

Charenton—St. Mary Parish

Mike Hogg No. 1 State, sec. 5-13s-9e. Drlg. sh. 5,322 ft.

Dog Lake—Terrebonne Parish

Texas Co. No. 19 State, sec. 5-22s-16e. Drlg. sdy. sh. 6,897 ft.

Cameron Meadows—Cameron Parish

Burton Sutton No. 14 School Land, sec. 16-14s-13w. T.D. 2,538 ft.; rmg.

Magnolia-Humble No. 18 Cameron Meadows, sec. 21-14s-13w. Drk.

Darrow—Ascension Parish

Humble O. & R. Co. No. 4 Community, sec. 33-10s-2e. Drk.

Humble O. & R. Co. No. 13 Humble Community, sec. 33-10s-2e. T.D. 4,423 ft.; P.B. and sdtrkg.; top salt 5,178 ft.; T.D. 5,254 ft.; P.B. 2,114 ft.; W.O.C.

Fausse Point—Iberia Parish

Texas Co. No. 2 State, sec. 35-11s-8e. Drlg. sh. 6,028 ft.

Four Isle—Terrebonne Parish

Texas Co. No. 7 State, sec. 14-21s-6e. Abd. 7,272 ft.

Gillis—Calcasieu Parish

Fohs Oil Co. No. 12 Castle, sec. 13-9s-8w. T.D. 7,073 ft.; 7-in. csg. 7,050 ft.; I.P. 450 B.P.D.; ¼-in. ck.

Fohs Oil Co. No. 13 Castle, sec. 14-9s-8w. T.D. 7,035 ft.; 7-in. csg. on bottom; I.P. 550 B.P.D. through ¼-in. ck.

Fohs Oil Co. No. 14 Castle sec. 13-9s-8w. Drk.

Fohs Oil Co. No. 15 Castle, sec. 13-9s-8w. Drk.

Union Sulphur Co. No. 5 Barbe, sec. 11-9s-8w. Abd. 6,429 ft.

Union Sulphur Co. No. 2 Bel, sec. 12-9s-8w. T.D. 6,788 ft.; fsg.

Union Sulphur Co. No. 2 Kaufman, sec. 13-9s-8w. T.D. 6,773 ft.; P.B. 6,325 ft. T.D. 7,377 ft.; 7-in. csg. 7,371 ft.; I.P. 700 B.P.D. through ¼-in. ck.

Union Sulphur Co. No. 10 Powell, sec. 29-7s-2w. Drk.

Union Sulphur Co. No. 13 State, sec. 12-9s-8w. Drk.

Union Sulphur Co. No. 15 State, sec. 12-9s-8w. Drk.

Hackberry—Cameron Parish

Gulf Oil Corp. No. 21 Irwin, sec. 12-12s-10w. T.D. 8,510 ft.; D.S. stuck.

Stanolind O. & G. Co. No. 5 Carter-Severing, sec. 22-12s-10w. Drlg. 1,686 ft.

Stanolind O. & G. Co. No. 24-B Gulf Ld., sec. 14-13s-10w. Drlg. sh. 5,542 ft.

Stanolind O. & G. Co. No. 2 Portie, sec. 23-12s-10w. Drlg. sh. 6,480 ft.

Stanolind O. & G. Co. No. 7-A School Ld., sec. 16-12s-10w. 10¾-in. csg. 1,969 ft.

Texas Co. No. 21 State, sec. 12-12s-10w. Drk.

Texas Co. No. 19-B State, sec. 13-12s-9w. Drlg. 5,490 ft.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1 Barrileau, sec. 59-13s-8e. T.D. 8,258 ft.; P.B. 8,035 ft.; sdtkd.; drld. to 8,850 ft.; will run 5-in. csg. to 7,350 ft.; sdtkd.; no report.

Herton Oil Co. No. 2 Carter, sec. 38-13s-9e. Drlg. sh. 2,635 ft.

Jennings—Acadia Parish

Lake City Oil Co. No. 1 Jennings-Haywood, sec. 46-9s-2w. 6⅝-in. csg. 1,786 ft.; rig up to pump.

Stanolind O. & G. Co. No. 16 Houssiere-Latrielle, sec. 47-9s-2w. T.D. 7,222 ft.; 7-in. csg. 7,128 ft.; failed to flow.; rocking with gas.

Stanolind O. & G. Co. No. 17 Houssiere-Latrielle, sec. 47-9s-2w. T.D. 7,204 ft.; reaming.

Superior Oil Prod. Co. No. 1 Crawley, sec. 42-9s-2w. R.U.

Lafitte—Jefferson Parish

Texas Co. No. 5 Rigolettes, sec. 29-17s-24e. Drlg. sh. with streaks of sd. 10.-642 ft.

Lake Barre—Terrebonne Parish

Texas Co. No. 37 Lake Barre State. T.D. 7,948 ft.; drlg. salt in sdtkd. hole.

Texas Co. No. 38 State, sec. 38-21s-19e Top salt 1,355 ft.; salt 3,079 ft.; no report.

Lake Hermitage—Plaquemines Parish

Gulf Oil Corp. No. 6, LaFourche, sec. 11-8s-25e. Drk.

Lake Pelto—Terrebonne Parish

Texas Co. No. 15 State, sec. 17-23s-18e. Cg. sd. showing oil 6,093 ft.

Leesville—LaFourche Parish

Gulf Oil Corp. No. 57 Leesville, sec. 27-21s-22e. Cg. wtr. sd. 4,341 ft.

Texas Co. No. 51 Leesville, sec. 34-21s-32e. Drk.

Texas Co. No. 52 Leesville, sec. 34-21s-32e. Drlg. sh. 3,198 ft.

Texas Co. No. 52 Leesville, sec. 37-21s-32e. Drk.

New Iberia—Iberia Parish

Crysanthon et al No. 1 Gulf fee, sec. 71-12s-7e. T.D. 7,336 ft.; P.B. 6,800 ft.; 7-in. csg. 6,829 ft.; making squeeze job; perfd. csg. 6,707-25 ft.; tstg.

H. Fostiades No. 3 Gulf Ld., sec. 25-12s-7e. Drk.

H. Fostiades No. 3 Schwing, sec. 25-12s-7e. Drk.

Wm. Hollis No. 4 Bolivar, sec. 56-12s-7e. Drlg. sh. and sd. 4,896 ft.; no report.

Wm. Hollis No. 2-A Bullock-Burke, sec. 25-12s-7e. 7-in. csg. 3,950 ft.; W.O.C.

Texas Co. No. 1 Clementine, sec. 25-12s-7e. Cg. sd. 6,312 ft.

Texas Co. No. 3-B Hanzen, sec. 54-12s-7e. R.U.

Texas Co. No. 1 Schwing. 10-in. csg. 1,341 ft.; T.D. 6,732 ft.; tstg.

Roanoke—Jefferson Davis Parish

Humble O. & R. Co. No. 5 Devilbiss, sec. 14-9s-42. T.D. 8,694 ft.; rng. 7-in. csg.

Shell Pet. Corp. No. 6 Kratzer, sec. 12-9s-4w. Drk.

Port Barre—St. Landry Parish

Gulf Oil Corp. No. 14 Wilson Cochran, sec. 4-6s-5e. T.D. 3,889 ft.; P.B. 3,350 ft.; R.U. to pmp.

Pan American Prod. Co. No. 2 Garland, sec. 4-6s-5e Drk.

Pan American Prod. Co. No. 1 Haskins Garland. T.D. 3,674 ft.; tstg.

St. Martinville—St. Martin Parish

Continental Oil Co. No. 1 fee, sec. 57-11s-6e. 13⅜-in. csg. 1,387 ft.; T.D. 6,707 ft., pulled drill pipe in two 90 ft. off bottom; hole cleaned; drlg. sh. 7,328 ft.

Sulphur—Calcasieu Parish

Union Sulphur Co. No. 782 fee, sec. 29-9s-10w. Drlg. sdy. sh. 4,319 ft.

Union Sulphur Co. No. 834 fee, scc. 20-9s-10w. Drlg. sh. 2,710 ft.

Union Sulphur Co. No. 835 fee, sec. 20-9s-10w. Drlg. 1,830 ft.

Tepetate—Acadia Parish

Continental Oil Co. No. 7-A Homeseekers, sec. 29-7s-2w. Drlg. sdy. sh. 7,785 ft.

Continental Oil Co. No. 2 P. W. Miller, sec. 28-7s-2w. T.D. 8,315 ft.; tstg.

Continental Oil Co. No. 1 Stoddard, sec. 29-7s-2w R.U.

Continental Oil Co. No. 6-A Welch, sec. 28-7s-2w. Drlg. sh. and L. 8,212 ft.

S. LOUISIANA WILDCATS

Acadia Parish

H. E. Dalton No. 1 Setting, sec. 17-7s-1w. S.D. 2,450 ft.

Allen Parish

Humble O. & R. Co. No. 3 Bel, located in cratered hole, sec. 26-6s-7w. 10¾-in. csg. 165 ft.; drlg. sdy. sh. 1,948 ft.

Avoyelles Parish

Frost Oil Co. No. 1 Hines Lumber Co., sec. 3-3n-4e. Drk.

Calcasieu Parish

Buhler Oil Co. No. 2 Faiszt, sec. 26-8s-10w. Old T.D. 4,412 ft.; S.D. 3,755 ft.

General Crude Oil Co. No. 1 George P. Buhler, sec. 30-8s-9w. Drlg. sh. 7,439 ft.

J. Elmer Thomas No. 1 Farmers Ld. Co., sec. 20-10s-7w. Drlg. sh. 1,260 ft.

Cameron Parish

Magnolia Pet. Co. No. 1, Johnson Bayou, sec. 16-15s-14w. Drlg. sh. 5,440 ft.

Magnolia Pet. Co. No. 1 Raymond Lebau, sec. 13-12s-9w. Drlg. sh. 3,262 ft.

Pure Oil Co. No. 1, Mallard Bay, sec. 21-13s-3w. 18⅝-in. csg. 1,499 ft.; drlg. sd. rock 4,191 ft.

Southern Sulphur Co. No. 2 State, sec. 29-15s-10w. Drk.

East Baton Rouge Parish

Cavalier Oil Co. No. 1 Vingnes, sec. 49-8s-2e.T.D. 5,655 ft.; washing over D.S.

Cavalier Oil Co. No. 1 Young, sec. 62-4s-1w. Drk.

East Feliciana Parish

East Feliciana Oil No. 1 West & Budding, sec. 37-1s-1w. Spudded 15 ft. and S.D.

Bayou Blue—Iberville Parish

Humble O. & R. Co. No. 1 Wilbert, sec. 67-9s-11e. Drlg. 20 ft.

Iberia Parish

Jefferson Lake Oil Co. No. 409 Lake Pigneur, Twp. 12s-3e. Sh. 5,910 ft.; no report.

Texas Co. No. 1-B State, Vermillion Bay, sec. 16-15s-6e. Drlg. sdy. sh. and L. 8,930 ft.

Jefferson Parish

Triangle Oil Co. No. 1 Conroe, sec. 125-12s-11e. R.U.

Jefferson Davis Parish

Shell Pet. Corp. No. 1 Joe Sturdivant, sec. 25-10s-4w. 10¾-in. csg. 2,616 ft. drlg. sh. 8,602 ft.

Stanolind O. & G. Co. No. 1 C. E. Britt, sec. 15-10s-3w. 9⅝-in. csg. 8,842 ft.; T.D. 9,944 ft.; D.S. stuck; P.B. and sdtrkd. at 9,250 ft.; drlg. sh. 9,316 ft.

Livingston Parish

Coastline Oil Co. No. 1 Addison Trust Co., sec. 7-7s-3e. Drk.

Plaquemines Parish

Gulf Oil Corp. No. 1 Bay-Adams, sec. 25-32s-19. Drk.

Tide Water Oil Co. No. 2 Manhattan Fruit Co., sec. 19-13s-12e. R.U.

St. Bernard Parish

John Cartwright No. 1 Meraux Nunez, sec. 19-13s-12e. Sd. 6,477 ft.

Gulf Oil Corp. No. 1 Lake Lery, sec. 28-14s-14e. Drk.

St. James Parish

Shell Pet. Corp. No. 2 Colonial Sugar, 4,800 ft. N of No. 1, sec. 15-12s-5e. R.U.

St. Landry Parish

Stanley Thompson No. 1 Lewis, sec. 29-5s-6e. R.U.

St. Martin Parish

Texas Co. No. 2 State, sec. 14-10s-9e T.D. 8,909 ft.; drill stem stuck; pulled in two at 5,909 ft.; cutting and pulling drill pipe stuck at 3,450 ft.

Texas Co. No. 1 Bayou Sale, sec. 23-17s-9e. Drlg. sh. 3,110 ft.

St. Mary Parish

Texas Co. No. 1, Horse Shoe Bayou, sec. 40-17s-9e. Drlg. sh. 6,525 ft.

Terrebonne Parish

Humble O. & R. Co. No. 1 H. J. Ellender, sec. 23-19s-19e. Drlg. sdy. sh. 2,840 ft.

Shell Pet. Corp. No. 1-B Realty, sec. 18-17s-15e. R.U.

Vermilion Parish

Continental Oil Co. No. 1 O. C. Hebert, sec. 20-12s-3e. T.D. 11,732 ft.; circulating with mud; well tried to blow out; fsg. for stuck D.S.; hole cleaned to 10,680 ft.; fsg.

Delcambre & Shelton No. 1 Delcambre, sec. 63-12s-6e. S.D. 2,708 ft.

Del-Shell Exploration Co. No. 1 Landry hrs., sec. 1-13s-4w. S.D. 2,000 ft.

Louisiana Land & Expl. Co. No. 1 La. Fur Co., sec. 16-15-1e. Bldg. foundations

Stanolind O. & G. Co. No. 1 Fred Stovall. R.U.

TEXAS

Week Ending October 10

GULF COAST FIELDS

Raccoon Bend—Austin County

Humble O. & R. Co. No. 7 Austin College, Wm. Harvey Sur. 10¾-in. csg. 1,101 ft.; T.D. 3,250 ft.; 7-in. csg. 3,250 ft.; I.P. 59 B.P.H.; ¼-in. ck.

Humble O. & R. Co. No. 6-C Grawunder, Wm. C. White Sur. Drlg. sh. 3,280 ft.

Humble O. & R. Co. No. 6-B Hardy, J. E. Grace Sur. T.D. 4,117 ft.; I.P. 8 B.P.H.; ¼-in. ck.

Hastings—Brazoria County

W. L. Goldston No. 1 fee, Block 6, B.B.B. &C. Sur. Drlg. sh. 3,437 ft.

Humble O. & R. Co. No. 2 Brown, W. H. Snyder Sur. 10¾-in. csg. 1,890 ft. T.D. 6,150 ft.; P.B. 6,118 ft.; P.B. 5,962 ft.; tstd. 600 lbs. pressure on D.S.T. 5,910-50 ft.

Humble Oil & Ref. Co. No. 1 Geisler, Block 34, H.T.&B. Sur. Drlg. sh. 1,365 ft.

Stanolind O. & G. Co. Ng. 1 Floyd Brown, H.T.&B. Sur. No. 29. Drk.

Stanolind O. & G. Co. No. 1 Margaret Kidd, B. T. Masterson Sur. Loc.

Stanolind O. & G. Co. No. 4-B Brown, H.T.&B. Sur. No. 29. T.D. 6,060 ft.; 7-in. csg. 5,793 ft.; comp.; no gauge.

Stanolind O. & G. Co. No. 3 Drodgemeyer, H.T.&B. Sur. No. 36. Drlg. sh. and L. 5,068 ft.

Stanolind O. & G. Co. No. 1 Edwards, Wm. Henry Sur. 10¾-in. csg. 1,861 ft.; T.D. 6,060 ft.; 7-in. csg. 5,992 ft.; I.P. 592 B. P.D.; ¼-in. ck.

Stanolind O. & G. Co. No. 4 Ford, A.C.H. &B. Sur. No. 1. 10¾-in. csg. 1,836 ft.; T.D. 6,080 ft.; rmg.

Stanolind O. & G. Co. No. 5 Ford, A.C.H.& B. Sur. No. 1. Loc.

Stanolind O. & G. Co. No. 6 Ford, A.C.H.& B. Sur. No. 1. 16-in. csg. 90 ft.; T.D. 115 ft.

Stanolind O. & G. Co. No. 1 Surface, B.B. B.&C. Sur. Drk.

Stanolind O. & G. Co. No. 1 Scott, H.T. &B. Sur. No. 29. 10¾-in. csg. 1,876 ft.; 7-in. csg. 5,753 ft.; T.D. 6,060 ft.

Stanolind O. & G. Co. No. 1 Turner, A.C. H.&B. Sur. No. 1. Drlg. sh. 4,431 ft.

Stanolind O. & G. Co. No. 7 Williams, A.C. H.&B. Sur. No. 1. Loc.

Lockridge—Brazoria County

Gulf Oil Co. No. 2-A Wilkes and Smith, J. Robinson Sur. Drlg. sh. 5,539 ft.

Manvel—Brazoria County

Bowles & Borsodi No. 4 Norvell Co., Inc., H.T.&B. Sur. No. 23. R.U. and S.D.

Eurton Drlg. Co. No. 1 Baldwin, Lot 115, H.T.&B. Sur. No. 92. Drlg. sh. 2,950 ft.

Harrison & Abercombie No. 2 Ewing, A.C. H.&B. Sur. T.D. 5,650 ft.; 7-in. csg. 5,647 ft.

Sterling Oil & Ref. Co. No. 1 Hamilton, E. Little Sur. R.U.

Texas Co. No. 1 A. Ellis, H.H. Little Sur. Drlg. sh. 1,140 ft.

Texas Co. No. 23 Houston Oil Field Assn., A.C.H.&B. Sur. No. 91; 10-in. csg. 1,130 ft.; T.D. 4,058 ft.; 7-in. csg. 4,044 ft.; flwd. 11 bbls. in 24 hrs.; T.P. 1,700 lbs.; C.P. 680 lbs.

Texas Co. No. 3 Lemmer, T. Spraggins Sur. 10-in. csg. 1,130 ft. T.D. 4,122 ft., 7-in. csg. 4,102 ft.; I.P. 376 B.P.D.; ¼-in. ck.

Texas Co. No. 6 Rash, T. Spraggins Sur. R.U.

West Columbia—Brazoria

Sterling O. & G. Co. No. 1 J. A. Phillips, Geo. Kennilee Sur. Drk.

Texas Co. No. 14 Abrams, George Tenille League Sur. T.D. 3,061 ft.; P.B. 3,191 ft.; drlg. sh. and shells 3,647 ft.

Heyser—Calhoun County

Humble Oil & Ref. Co. No. 3 Welder, J. M. Rios Sur. Drk.

Humble O. & R. Co. No. 4-A Welder J. M. Rios Sur. T.D. 5,470 ft.; perf. csg. 5,465-68½ ft. I.P. 15 B.P.D. through 3/16-in. ck.

Humble O. & R. Co. No. 3-B Welder A. Sisneros Sur. Cg. sd. and sh. 5,610 ft.

Humble O. & R. Co. No. 4-B Welder, A. Sisneros Sur. Drk.

Portilla Oil Co. No. 1 R. H. Welder, A. Sisneros Sur. 10¾-in. csg. 554 ft.; W.O.C.

Portilla Oil Co. No. 1 Welder, A. Sisneros Sur. T.D. 5,494 ft.; flwg. P.L. oil by heads.

Anahuac—Chambers County

Gulf Oil Corp. No. 4 Knowles, sec. 48, H. &T.C. Sur. 7-in. csg. 7,081 ft.; T.D. 7,175 ft.; failed to flow; P.B. 7,131 ft.; swbg.

Gulf Oil Corp. No. 5 Knowles, sec. 48, H. &T.C. Sur. Drk.

Humble Oil & Ref. Co. No. 11 Braussard, sec. 63, H. & T. C. Sur. 9⅝-in. csg. 1,532 ft.; cg. sd. 7,059 ft.

Humble Oil & Ref. Co. No. 22 Middleton, sec. 58, H.T.&C. Sur. T.D. 7,085 ft.; 5½-in. csg. 7,050 ft.

Humble O. & R. Co. No. 23 Meddleton, sec. 58, H.&T.C. Sur. 10¾-in. csg. 1,574 ft.; cg. sh. 6,723 ft.

Humble Oil & Ref. Co. No. 3-B White, J. McGahey Sur. Drlg. sh. and L. 5,731 ft.

Humble Oil & Ref. Co. No. 14 White, J. McGahey Sur. Drlg. sh. and L. 6,497 ft.

Humble O. & R. Co. No. 3 Wilcox, sec. 58, H.&T.C. Sur. 9⅝-in. csg. 1,503 ft.; T.D. 7,085 ft.; 5½-in. csg. 7,040 ft.

Sun Oil Co. No. 22 White, J. McGahey Sur. Cg. sh. 7,030 ft.

Cotton Lake—Chambers County

Glenn H. McCarthy No. 1 McCarthy No. 4 Kilgore, J. Townsend Sur. Drk.

Humble O. & R. Co. No. 1, Howard Winfree Sur. 10¾-in. csg. 1,075 ft.; drlg. sh. 2,890 ft.

Humble O. & R. Co. No. 2 Howard, Winfree Sur. Loc.

Glenn H. McCarthy No. B Kilgore, J. Townsend Sur. 10¾-in. csg. at 1,180 ft.; T.D. 6,427 ft.; I.P. 20 bbls. of fluid per hr. through ¼-in. ck.

Turtle Bay—Chambers County

Sun Oil Co. No. 1 C. J. Chambers, M. A. Carroll Sur. 16-in. csg. 1,197 ft.; T.D. 6,600 ft.; 7-in. csg. 6,572 ft.

Big Creek—Fort Bend County

Gulf Oil Co. No. 71 Davis, M. Young Sur. Drlg. sh. 4,230 ft.

Jenal Oil Co. No. 3 Byron, M. Young Sur. Drlg. sh. 3,736 ft.

H. L. Patton No. 1 Bryan, M. Young Sur. T.D. 1,717 ft.; S.D.

Thompson Drlg. Co. No. 1 W. C. Moore, B. Wickerson Sur. Drlg. sh. 1,400 ft.

Blue Ridge—Fort Bend County

Barnett Pet. Co. No. 1-B Blakely, Lot 7, Blk. E, Drew Sur. T.D. 3,273 ft.; fsg.

Ben G. Barnett No. 1-C Blakely, E. Drew Sur. Top salt 2,666 ft.; T.D. 2,667 ft.; swbd.; comp. for gas well.

H. H. Hoffman No. 1 Lee, J. Poitevent Sur. T.D. 4,014 ft.; 7-in. csg. 3,890 ft.; set liner. Rig. up to pump.

Texas Gulf Prod. Co. No. 1-B Blakely, Lot No. 7, E. Drew Sur. T.D. 3,887 ft. P.B. to 2,250 ft.; T.D. 4,325 ft.; P.B. 4,000 ft.; prep. to test.

Boling—Fort Bend County

Mack Hank Oil Co. No. 2-A Farmer, J. Scott Sur. Drlg. sh. 800 ft.

Mack Hank Oil Co. No. 2-C Farmer, J. Scott Sur. T.D. 4,861 ft.; 7-in. csg. 4,238 ft.

H. K. Spear et al No. 1 Kasperek, Simon Miller Sur. 7-in. csg. 3,960 ft.; S.D. 4,015 ft.

Orchard—Fort Bend County

Gulf Oil Corp. No. 7-H Moore, Burnap Sur. Drk.

Gulf Oil Corp. No. 46 Moore, Leo Burknapp Sur. Drlg. sh. 7,289 ft.

Gulf Oil Corp. No. 48 Moore, J. Frazier Sur. Drlg. sd. and L. 2,798 ft.

Thompson-Fort Bend County

Robert Eikel No. 1 J. W. Hempel, S. Kennedy Sur. Cmtd. 5-in. csg. 5,336 ft.; W. O.C.

Sterling O. & R. Co. No. 2 Booth, H. Christmas Sur. T.D. 5,401 ft.; rng. 7-in. csg.

High Island—Galveston County

Stanolind O. & G. Co. No. 9-B Cade, M. Dunman Sur. R.U.

Stanolind O. & G. Co. No. 58 Cade, N. Fitzsimmons Sur. Drlg. 4,217 ft.

Stanolind O. & G. Co. No. 59-A M. Fitzsimmons Sur. R.U.

Dickinson—Galveston County

Humble O. & R. Co. No. 1 Mealy. Drlg. sd. and sh. 8,876 ft.

Humble O. & R. Co. No. 10-A Stewart, W. K. Wilson Sur. T.D. 8,707 ft.; I.P. 32 B. P.H. through ¼-in. ck.

Keneo Oil Co. No. 2 Broughton, N offset to No. 1. Drlg. 6,912 ft.

Humble O. & R. Co. No. 11-A Stewart, A. Edwards Sur. R.U.

Pan American Prod. Co. No. 2 Craig, W. K. Wilson Sur. T.D. 150 ft.; W.O.C.

Smith and MacDannald No. 1 Shelar, J. O. Jones Sur. 16-in. csg. 120 ft.; 10¾-in. csg. 981 ft.; drlg. sh. 4,290 ft.

Stanolind O. & G. Co. No. 6 State River Bed. 13⅜-in. csg. 2,119 ft.; T.D. 8,050 ft.; P.B. 6,806 ft.; W.O.C.

Greens Lake—Galveston County

Sun Oil Co. No. 3 J. D. Hughes, Wm. C. Baker Sur. Abd. 3,920 ft.

Sun Oil Co. No. 4 Hughes, W. C. M. Baker Sur. R.U.

Arriola—Hardin County

Republic-Houston Oil Co. No. 14 fee, E. Arriola Sur. 13⅜-in. csg. 835 ft.; T.D. 3,285 ft.; 9⅝-in. csg. 3,270 ft.; S.D.

Republic Prod. Co. No. 15 fee, E. Arriola Sur. Spudded.

Republic Prod. Co. No. 16 fee, E. Arriola Sur. T.D. 3,835 ft.; P.B. 3,004 ft.; W.O.C.

Batson—Harding County

Deering et al No. 5 Hooks, Donoho Sur. Spudded.

Deering et al No. 4 W. W. Cruse, F. H. Green Sur. Drlg. sh. 2,212 ft.

Sour Lake—Hardin County

Kirby Pet. Co. et al No. 1, Stephen Jackson Sur. A-34. Cg. sh. 4,575 ft.

Mykawa—Harris County

Flanagan Oil Co. No. 1 M. J. Cowherd, Lot 260, Wm. Lovett Sur. T.D. 4,853 ft.; 7-in. csg. 4,780 ft.; tstg.

West Prod. Co. No. 10 W. H. Irwin, W. B. Walker Sur. Drk.

West Prod. Co. No. 1 Minnetex, Wm. Lovett Sur. Sdtrk. 5,131 ft.; drlg. sh. 7,010 ft.

Pierce Junction—Harris County

Rio Bravo Oil Co. No. 11 fee, B.B.B.&C. Sur. 10¾-in. csg. 1,070 ft.; drlg. sh. 3,810 ft.

Superior Oil Co. No. 2-B Whitehead, Blk. 14, J. Hamilton Sur. Cg. 3,794 ft.; no report.

South Houston—Harris County

Dick Schwab No. 1-A Bennett Nicklos Drlg. Co. Drlg. sh. 2,439 ft.

Stanolind O. & G. Co. No. 1, District No. 11. Derrick.

Stanolind O. & G. Co. No. 5 First National Bank, Callahan and Vince Sur. 10¾-in. csg. 1,206 ft.; T.D. 1,481 ft.

Stanolind O. & G. Co. No. 3 Holland and Price, H.T.&B. Sur. No. 6. R.U.

Stanolind O. & G. Co. No. 2 Johnson, H.T. &B. Sur. No. 6. R.U.

Stanolind O. & G. Co. No. 1 McKinney, H.T.&B. Sur. No. 6. Drlg. sh. and shells 2,972 ft.

Tomball—Harris County

Humble O. & R. Co. No. 6 Milo, C. N. Pillott Sur. 10¾-in. csg. 955 ft.; T.D. 5,553 ft.; I.P. 10 B.P.H. through ¼-in. ck.

Humble O. & R. Co. No. 2 Dooley, J. Pruitt Sur. T.D. 5,571 ft.; pulling screen.

Humble O. & R. Co. No. 3 Mahaffey, J. Pruitt Sur. 10¾-in. csg. 924 ft.; W.O.C.

Humble O. & R. Co. No. 1 Tomball Townsite Unit 4. 10¾-in. csg. 948 ft.; T.D. 5,552 ft.; rng. 7-in. csg.

Shell Pet. Corp. No. 1 Key. Drlg. sh. and L.; T.D. 5,563 ft.; I.P. 327 bbls. in 16 hrs.; ¾-in. ck.

Texas Co. No. 2 S. T. Doughtie, I.&G.N. Sur. Drlg. sh. 1,515 ft.

Amelia—Jefferson County

Humble O. & R. Co. No. 1 Phelan, C. Williams Sur. Drk.

Humble O. & R. Co. No. 1 Tyrell Combest, C. Williams Sur. 10¾-in. csg. 1,991 ft.; top sd. 6,735 ft.; 7-in. csg. 6,771 ft.; T.D. 6,779 ft.; deepened to 6,800 ft.; tstd. S.W.; P.B. 6,786 ft.; rng. screen.

Glenn H. McCarthy No. 2-A B. M. Long H. Williams Sur. T.D. 6,105 ft.; flwd. 282 bbls. of fluid per day through ¼-in. ck.; T.P. 2,250 lbs.; C.P. 2,400 lbs.

Glenn H. McCarthy No. 1-H Longe, H. Williams Sur. Plts.

Normandie Oil Corp. No 1 G. C. Prutzman, H. Williams Sur. Drlg. sh. 5,034 ft.

Texas Co. No. 1 Yount, A. Houston Sur. 10-in. csg. 1,236 ft.; drlg. sh. and L. 5,426 ft.

Fannett-Jefferson County

Gulf Oil Corp. No. 19 Thomas, W. H. Smith Sur. Drlg. sh. 3,329 ft.

Nome—Jefferson County

Shell Pet. Corp. No. 1 Paggi, J. W. Kirby Sur. T.D. 6,055 ft.; flwd. 140 B.P.D. through ¼-in. ck.

Sun Oil Co. No. 1 Longe, J. Blair Sur. R.U.

Sur Oil Co. No. 2 Long, John Blair Sur. T.D. 6,057 ft.; went dead; cutting and pulling lnr.

Cleveland—Liberty County

Gulf Oil Corp. No. 3 McDonald, Chas. Smith Sur. T.D. 5,880 ft.; I.P. 350 B.P.D.

Hankamer—Liberty County

Gulf Oil Corp. No. 1 Bernice Hankamer, R.U.

Gulf Oil Corp. No. 1 Weaver, A. W. Weaver Sur. Drlg. sh. 5,612 ft.

Gulf Oil Corp. No. 1 J. L. Weaver. Drlg. sh. 4,312 ft.

Uscan Oil Co. No. 5 Ezzell, Levi Barrow Sur. T.D. 5,678 ft.; 7-in. csg. 2,689 ft.; waiting comp. of No. 6.

Hull—Liberty County

Houston Oil Co. No. 2-B Baldwin, J. Devore Sur. Drlg. gmbo. 504 ft.

Republic Prod. Co. No. 125 Dolbear, J. Devore Sur. Drlg. sh. 2,739 ft.

Esperson—Liberty County

Circle W Oil Co. No. 1 Kay, M. Duncan Sur. Drlg. 1,210 ft.

General Crude Oil Co. No. 19 Moores Bluff, M. Duncan Sur. 7-in. csg. 2,838 ft.; drlg. sh. 3,212 ft.; no report.

Bay City—Matagorda County

Hamman Expl. Co. No. 1 J. H. Crocker, E. Hall Sur. R.U.

Hawkinsville—Matagorda County

Sun Oil Co. No. 2 Craig, T. Williams Sur. Top salt 796 ft.; T.D. 836 ft.

Markham—Matagorda County

Harrison and Abercrombie No. 9 Kountze, sec. 23. Drlg. sh. 1,830 ft.

Superior Oil Co. No. 1-B Hawks, W. H. Gainer Sur. Drlg. sh. 4,530 ft.

Texas Gulf Prod. Co. No. 1 Hudson, Henry Parker Sur. Loc.

Van Vleck—Matagorda County

McDaniel Drlg. Co. No. 1 C. T. Dye, M. Cummins Sur. Drlg. sh. 3,115 ft.

Skelly Oil Co. No. 11-B Cobb, M. Cummins Sur. Drlg. sh. 765 ft.

Skelly Oil Co. No. 9-C Cobb, M. Cummins Sur. T.D. 8,291 ft.; I.P. 550 B.P.D. through ¼-in. ck.

Conroe—Montgomery County

Adeltex Oil Co. No. 1 Lewellen, R. G. Hunter Sur. Drk.

A. U. Morrison No. 2 McComb, L. Smith Sur. 10¾-in. csg. 750 ft.; cg. 5,010 ft.

Strake Pet. Co. No. 14 Keystone-Mills, L. Smith Sur. Drlg. sh. 3,983 ft.

Orange—Orange County

B. Turnbull No. 1 Lutcher Moore, J. Dyson Sur. T.D. 5,095 ft.

Greta—Refugio County

Hewitt & Daugherty No. 29 Lambert, Carr & Connell Sur. T.D. 5,890 ft.; tstg.

Hewitt & Daugherty No. 31 Lambert, Swisher Sur. Cmtd. 7-in. csg. 5,876 ft.; I.P. 385 B.P.D. through ¼-in. ck.

United Gas Co. No. 28 Lambert, Hew Sur. T.D. 5,890 ft.; 7-in. csg. 5,866 ft.; comp.; no gauge.

Refugio—Refugio County

United Gas Co. No. 16 Heard, Lot 13, Refugio townsite. T.D. 4,925 ft.; I.P. 195 B.P.D. through ⅛-in. ck.

United Gas Co. No. 4 Rea, Lot 1, Block 5, Drlg. sh. 4,839 ft.

Quintana-O'Connor—Refugio County

Quintana Pet. Co. No. 1 Mary C. Bauer, Ximines Sur. Drlg. sh. 5,639 ft.

Quintana Oil Co. No. 2 Heard, Ximines Sur. Drk.

Quintana Pet. Co. No. 39-A Tom O'Connor, Swisher Sur. Cg. 5,840 ft.

Quintana Pet. Co. No. 40-A O'Connor, Swisher Sur. R.U.

Quintana Pet. Co. No. 5-C Tom O'Connor, Swisher Sur. T.D. 5,875 ft.; I.P. 1,375 B.P.D. through ⅝-in. ck.

Quintana Pet. Co. No. 6-C O'Connor, Main Sur. Spudded.

Hughes—Victoria County

Portilla Oil Corp. No. 2 P. H. Welder, Felipe Dimmitt Sur., 933 ft. N of No. 1. T.D. 5,010 ft.; 5-in. csg. on bottom; tstd. S.W.

Placedo—Victoria County

American Liberty Oil Co. No. 2 Cortez, Brownson Sur. R.U.

Barnsdall-American Liberty Oil Co. No. 6 Pickering and Roos, J. M. Brownson Sur. T.D. 4,771 ft.; 7-in. csg. 4,754 ft.; I.P. 126 bbls. in 16 hrs.; 3/16-in. ck.

Barnsdall-American Liberty Co. No. 7 Pickering and Foos, S.A.&M.G. Survey T.D. 4,782 ft.; 7-in. csg. 4,773 ft.; W.O.C.

Barnsdall Oil Co. No. 8 Pickering and Roos, S.A.&M.G. Sur. Drk.

Harrison & Abercrombie No. 4 Vess, Brownson Sur. T.D. 4,766 ft.; 7-in. csg. 4,746 ft.; I.P. 40 B.P.D.; T.P. 150 lbs.

Magnolia Pet. Co. No. 2 Henderson and Pickering, Wm. Rupley Sur. Cg. sd. 4,775 ft.

Westgate Oil Co. No. 4 Mieska, J. M. Brownson Sur. 10¾-in. csg. 820 ft.; W. O.C.

Clay Creek—Washington County

Pompkal et al No. 3 Klatte, S.D. 576 ft.

Sun Oil Co. No. 17 Janner, J. F. Perry Sur. Drlg. 480 ft.

Sun Oil Co. No. 1 H. Lauter, N. Clay Sur. T.D. 7,464 ft.; 7-in. csg. 7,445 ft.; drlg. plug; prep. to test.

Five Corners—Wharton County

Texas Co. No. 4-B Pierce, A. H. Pierce Sur. Drk.

Louise—Wharton County

Pure Oil Co. No. 2 Adams, T. W. Heard Sur. Drk.

Pure Oil Co. No. 1 L. E. Lancaster, M. Cummings Sur. Drlg. sdy. sh. 5,115 ft.

Magnet—Wharton County

P. B. Watson No. 1 Sweet, Smith and McKinzie Sur., Lot 4, Blk. 84. S.D.

Pickett Ridge—Wharton County

Texas Crusader, Inc. No. 1 J. F. Kulbeia, J. C. Gifford Sur. 10¾-in. 600 ft.; W. O.C.

Texas Co. No. 1 A. N. Nilson, Blk. 37 I.&G.N. Sur. T.D. 4,709 ft.; 7-in. csg. 4,709 ft.

Texas Co. No. 26-A Pierce, I.&G.N. Sur. No. 38. T.D. 4,708 ft.; 7-in. csg. 4,708 ft.; T.D. 4,713 ft.; rigged up to pump.

Texas Co. No. 27-A Pierce, L.&G.N. Sur. No. 38. T.D. 4,711 ft.; 7-in. csg. 4,705 ft., pmpd. 10 bbls. in 12 hrs.

Texas Co. No. 32-A Pierce, I.&G.N. Sur No. 38. T.D. 4,712 ft.; 7-in. csg. 4,702 ft.; I.P. 305 bbls. in 16 hrs. through ¼-in. ck.

Withers—Wharton County

Texas Co. No. 14-C Withers, John Caldwell Sur. Drlg. 219 ft.

Texas Co. No. 12-C Pierce, Wm. Pettus Sur. 10-in. csg. 1,152 ft.; T.D. 4,392 ft.; prep. to resume drlg.

Texas Co. No. 13-C Pierce, John Caldwell Sur. T.D. 4,197 ft.; prep. to resume drlg.

GULF COAST WILDCATS

Austin County

W. H. Mitchell et al No. 1 F. Fenner, J Fitzgibbons Sur. Drlg. sh. 3,085 ft.

Brazoria County

Beatty, Bowles and Borsodi No. 1 Truska, Lot 4, Blk. 8, H.T.&B. Sur. Drk.

Texas Co. No. 1 Robbins, J. W. Brougham Sur. 11¾-in. csg. 4,950 ft.; T.D. 6,637 ft.; D.S. stuck.

Calhoun County

Benedum & Trees No. 1 Roemer Est., John T. Oggaberry Sur. Drlg. sdy. sh. 8,101 ft.

Continental Oil Co. No. 1 Austin Estate sec. 12, Blk. H. P.B. 8,521 ft.; sdtrkd. 8,471 ft.; T.D. 8,750 ft.; prep. to test.

Matagorda Oil Co. No. 1 Brundet, Tr. 8, Matagorda Island, 13⅜-in. csg. at 1,826 ft.; W.O.C.

Chambers County

Humble O. & R. Co. No. 1 A. D. Meddleton, in A. Meddleton Sur. R.U.

Sun Oil Co. No. 1 Acron, sec. 103. Drlg. sh. and L. 6,223 ft.

Sun Oil Co. No. 1 J. E. Broussard, W. B. Burton Lge. Drlg. sh. and L. 6,837 ft.

Sun Oil Co. No. 2 Hamilton, J. T. White Sur. 13⅜-in. csg. 1,385 ft.; W.O.C.

Colorado County

Coyle-Concord & Sterling No. 1 Mary E South, I.&G.N. Sur., sec. 41. 10¾-in. cs 755 ft.; P.B. to 5,940 ft.; stdkg. 5,990 ft.

Galveston County

Shell Pet. Corp. No. 1 Maco Stewart. Spillman Sur. 9⅝-in. csg. 7,707 ft.; drlg. sdy. sh. 9,185 ft.

Grimes County

Crook Bros. No. 1 Greer, B. D. O'Conner Sur. S.D. 3,402 ft.

Hardin County

Fred Harris No. 1 J. C. Change, Donoho Sur. Drk.

Republic-Houston Oil Co. No. 2 Brooks G. W. Brooks Sur. (relief well). Cmtd 7-in. csg. 7,027 ft.; T.D. 7,071 ft.; sd. shwg. oil; rng. elec. cg. test.

Harris County

Bunte O. & G. Co. No. 1 Graves, C. Walters Sur. 10-in. csg. 755 ft.; T.D. 6,428 ft.; sd. showing oil and gas; P.B. and sdtrkd. at 310 ft.; drlg. sh. 4,354 ft.

D. B. Cherry et al No. 1 Bert J. Dodge, Josiah Harrell Sur. Spudded.

Stanolind O. & G. Co. No. 1 Angelo Candelari Reels and Trobough Sur. 10¾-in. csg. 1,404 ft.; drlg. sh. 7,300 ft.

Jackson County

Steinberger Pet. Corp. No. 1 Drushel, F. Rodriguez Sur. T.D. 7,155 ft.; P.B. sdtk.; T.D. 7,180 ft.; 7-in. csg. 7,158 ft.; fsg.

Lavaca County

Cole Pet. Co. No. 1 Reed-Nollkamper, A. Smothers Sur. S.D. 2,395 ft.

Liberty County

J. C. Mayo No. 1 K. Moore, J. F. De Romayor Sur. Drlg. sh. 5,438 ft.

Matagorda County

Continental Oil Co. No. 2 Robbins, J. C. Franz Sur. Drk.

Tetts & Harris No. 1 Pierce, Lot 23, W. E. Wallace Sur. Drlg. sh. 5,351 ft.

Montgomery County

H. E. Williams No. 1 Peal, Owen Shannon Sur. Drlg. sh. 3,300 ft.

Chapman No. 1 Foster, D. Pevy Hous. Sur. Drk.; spudded.

Polk County

Peyton No. 1 McDonnald, P. J. Menard Sur. S.D. 4,120 ft.

Refugio County

Tide Water Oil Co. No. 1 Landgarf, J. Collyer Sur. R.U.

Tyler County

Republic Prod.-Houston Oil Co. No. 1 Hurd, Norman Hurd Lge. R.U.

Victoria County

Plymouth Oil Co. No. 1 Welder, S.A.&M. S. Sur. No. 153. Spudded.

Plymouth Oil Co. No. 1 J. J. Welder, S. A. Balding Sur. T.D. 6,084 ft.; rmg.

Walker County

W. B. Gossage No. 1 Carey Ld. & Dev. Co., D. M. McDonald Sur. R.U.

Roswell Oil Co. No. 1 J. Bosborn, J. Jordan Sur. Drk.

Wharton County

Barnett Pet. Co. No. 1 Bard, J. B. Marford Sur. Drlg. sh. 550 ft.

Feimont Oil Corp. No. 1 G. Mitchell, D. Wade Sur. Drlg. sh. 6,464 ft.

Pure Oil Co. No. 1 G. A. Duffy, sec. 107, E.G.R.R. Sur. T.D. 6,475 ft.; abd.

Pure Oil Co. No. 1 Topeka Natl. Bank, 160-ac. tr., W. F. York Sur. 10¾-in. csg. 1,460 ft.; drlg. sh. 6,396 ft.

Texas Crusader Oil Co. No. 1 fee, J. Smith & McKenzie Sur. 10¾-in. csg. 1,234 ft.; 7-in. csg. cmtd. 5,562 ft.; 7-in. cmtd. made squeeze job 5,535-37 ft.; prepare to test.

Texas Crusader Oil Co. No. 1 Hawes and Neal, S. Castleman Sur. 10¾-in. csg. 975 ft.; drlg. sh. 4,220 ft.

S. W. TEXAS WILDCATS

Atascosa County

Helvetia Oil Co. No. 1 S. Pratt, 1,400 ft NW line, 3,470 ft. SW line, J. de la Garza Sur. T.D. 3,116 ft.; P.B. 3,000 cg. L. 3,740 ft.

Bastrop County

Paul Teas No. 1 Vinklarek, S. Millet Lge. Drlg. 5,811 ft.

Bee County

W. V. Bowles No. 1 Mengers, W. Allen Sur. T.D. 6,010 ft.; D.&A.

Devonian Oil Co. No. 1 Manning, 1,650 ft. NE and SE lines tr., J. Poitevent Sur. Spudded in.

Randon Oil Co. No. 1 Handy Bros., J. Tool Sur. Drlg. 4,642 ft.

Brooks County

Magnolia Pet. Co. No. 1 Lasater, 330 ft. N and W lines, S. Korkill Sur. 440. Drlg. 493 ft.

Burleson County

Red Bank Oil Co. No. 1 Grann, 2,875 ft. S line, 1,500 ft. E line, E. Santel Sur. T D. 5,280 ft.; S.D.

Caldwell County

Adams and Lyles No. 1 Dale, W. Spiller Sur. T.D. 2,060 ft.; completing.

Brown Drlg. Co. No. 1 Pope, J. D. Rains Sur. T.D. 2,100 ft.; S.D.

John Storey No. 1 Smith, Pablo Martinez Sur. Drlg. 1,631 ft.

Duval County

Benedum & Trees Oil Co. No. 1 Sevier, 1,300 ft. S line, 980 ft. E line tr., Palo Blanquito Sur. Set 10-in. csg. 1,010 ft.; Cg. sh. 3,261 ft.

Frank Buttram No. 1 Nueces Land & Livestock Co., 1,350 ft. N line, 1,700 ft. E line, Sur. 102. S.D. 1,919 ft.

Frank Gravis No. 2 Gravis, 3,050 ft. SE line, 990 ft. SW line, Sur. 250. Drlg. 4,716 ft.

Lipscomb & Daubert No. 1 Peters, 330 ft. S line, 1,650 ft. E line, Mitigart Sur. 321. T.D. 1,518 ft.; S.D.

Edwards County

Plateau Oil Co. No. 1 R. L. Hatch, sec. 66, J. W. May Sur. T.D. 1,240 ft.; S.D., floods.

Goliad County

California Co. No. 1 Langrebe, 465 ft. N and E lines tract, Thomas Hancock Sur. T.D. 5,050 ft.; P.B. 4,859 ft.; tested wtr.; P.B. 4,812 ft.; comp.; est. 8 B.P.H. on ¼-in. ck.; T.P. 160 lbs.; C.P. 900 lbs.

Feimont Oil Corp. No. 1 Metz, G. Barrera Sur. T.D. 5,660 ft.; P.B. 3,460 ft.; perf. 3,425-30 ft.; no test; ripped csg. 3,880-88 ft.; comp.; est. 1,500,000 ft. gas; W.P. 1,200 lbs. on ⅛-in. ck.

Sun Oil Co. No. 1 Fromme, A. Martle Sur. Loc.

Gonzales County

M. S. Holliday No. 1 Edwards, W. W. Pace Lge. M.I.M.

Guadalupe County

Paul Armstrong No. 1 Tiller, J. C. King Sur. Drlg. 1,767 ft.

T. H. Coulter No. 1 Engleke, H. Cottle Sur. S.D.

Chas. Culver No. 1 Vorphal, Geo. Edwards Sur. No report.

Detroit-Texas Dev. Co. No. 1 Carter, 625 ft. SW line, 170 ft. NW line, 3,000-ac. tr. M.I.M.

Long & Ross No. 1 Feltz, Dunn Sur. T.D. 480 ft.; S.D.

J. T. Wood No. 1 Appling, Hunt Sur. M. I.M.

Hidalgo County

Helen K. Maxwell No. 1 Hidalgo Wtr. Dist. No. 2, Lot 11, Blk. 20. T.D. 731 ft.; S.D.

H. J. Porter No. 1 Sweeny Estate, Lot 1, Wood Subd. No. 2. Drlg. sh. 3,621 ft.

Jim Hogg County

Theo. Hicks No. 1 Kohler, sec. 9, Noriacitas Gr. Drlg. 2,577 ft.

Locke Purnell and Gifford Oil Co. No. 1 Gallagher, Blk. 128, Pippin Division, Randado Gr. T.D. 3,718 ft.; D.&A.

Locke Purnell and Gifford Oil Co. No. 2 Gallagher, 330 ft. S and W lines, Blk. 190, Pippin Subd. R.U.

Pen-Ultimo Oil Co. No. 1 Kohler, 2,640 ft. N line, 1,320 ft. W line, Blk. 9, Subd., Meracita Gr. Cg. sdy. sh. 2,793 ft.

Henry Swift et al No. 1 Holbien, Blk. 58, sec. 3, Las Animas Gr. Cg. sd. 2,653 ft.

Jim Wells County

Tom Graham No. 1 Bennett, 330 ft. N and W lines, Sec. 76, Lot 87. Sd. 2,343-65 ft.; D.S.T. 280 ft.; P.L.O. and 20 ft. w. water in 15 min.; comp.; est. 125 B.P.D. on 3/16-in. ck.; T.P. 440 lbs.; C.P. 860 lbs.

Gist & Graddy No. 1 Owens, 660 ft. N line, midway E and W lines, Sur 15: Set 7-in. csg. 2,340 ft.; T.D. 4,900 ft.; S.D.

Tom Graham No. 1 Luby Estate, Sh. 4, Los Presnos de Abajo Gr. Drlg. 4,827 ft.

E. M. Jones No. 1 Almond, N½, Sur. 7. Drlg. 2,863 ft.

La Jita Corp. No. 1 Schallert, 3,919 ft. S line, 2,097 ft. E line tr., Las Presenos Abajo Gr. D.S.T. 5,036-45 ft.; tested dry gas; 500 lbs. W.P. on ¼-in. ck.; cg. sh. 5,436 ft.

Putnam & Stewart No. 1 Canales, C Blk. 32, Mosser Subd., Canales Est. T.D. 3,454 ft.; D.&A.

Kleberg County

E. B. Clark No. 1 Kivlin, 150 ft. N and E lines, Blk. 8, sec. 39, Kingsville Town & Improvement Subd. T.D. 2,142 ft.; S.C.; S.D.

LaSalle County

W. H. Vernon No. 1 Las Abias ranch. 150 ft. N line, midway E and W lines. sec. 726. S.D. 420 ft.

Live Oak County

Barber & Miller No. 1 Blanks, A.B.&M. Sur. No. 103. D.&A. 760 ft.

Dirks Bros. No. 1 Atkinson, Louis Ayres Sur. Fsg. 1,100 ft.

J. H. Durbin No. 4 Marbach, S. Hays Sur. T.D. 902 ft.; set. 6⅝-in. csg. 896 ft.; drlg. plugs.

R. Feltner No. 1 Sanger, 990 ft. S line, 330 ft. W line, E½, Sur. 391. Spudded.

Loma Oil Co. No. 2 Palmer, 150 ft. NW line, 1,800 ft. NE line tr., Sparks Sur. T.D. 1,097 ft.; D.&A.

O. W. Killam No. 1 Schultz Live Stock Co., 1,320 ft. S line, 640-ac. tr., 150 ft. W of highway, Hefferman Sur. T.D. 2,272 ft.; S.D.

Maryland Oil Co. No. 1 Geo. West Est., Lot 399, James Vaughn Sur. R.U.

Sun Oil Co. No. 1 James, Pat McGlover Sur. Loc.

Maverick County

J. N. Boicourt No. 1 Edson et al, 1,230 ft. E line, 1,120 ft. N line, Eaves Sur. 68. T.D. 542 ft.; rng. csg.

Rio Dev. Co. No. 1 Winchester Kelson 150 ft. W line, 750 ft. S line, E½, 130-ac. tr. T.D. 804 ft.; S.D.

McMullen County

L. D. Armsby No. 9 Griffith, 650 ft. N line, 150 ft. NE of No. 8. T.D. 940 ft.; recmtd.

F. R. Floyd et al No. 1 Plaserk, 150 ft. N and E lines, Blk. 2, Garner Sur. T.D. 1,392 ft.; S.D.

Hagen Stewart Oil Co. No. 1 Kunz, M. Holy Sur. Cg. 1,083 ft.

R. H. Hill No. 1-A Richardson, Sur. 158. T.D. 2,780 ft.; T.A.

C. I. Jennings No. 1 Regan, 1,070 ft. S. Frio River, 330 ft. W line, 642-a. tr., Haley Gr. S.D. 1,026 ft.

F. W. Nute No. 1 Fehler, 700 ft. W line, 570 ft. S line, 250-ac. tr., Byrne-Pittrick Grants. Loc.

Geo. Pickett No. 1 Fisher, 2,400 ft. SE line, 11,400 ft. SW line, John Garner Sur. Drlg. 973 ft.

I. Taylor No. 1 Lark, 150 ft. S and W lines, Lot 72, Scrugham Sur. T.D. 973 ft.; T.D. 600 ft.; stdg.

Nueces County

Barnsdall Oil Co. No. 1 Weil, Lot 5, McBride Partition. Cg. 5,257 ft.

Bunte O. & G. Co. and Woodley Pet. Co. No. 1 Cain, sec. 4, Kinney Subd. Drlg. 5,911 ft.

O. W. Killam No. 1 Sevier, 330 ft. S and W lines, sec. 112, Pauls Subd., Driscoll ranch. Drlg. 510 ft.

San Patricio County

Eleanor Oil Co. No. 1 Kline, Lot 5, Blk. "C," Coleman-Fulton Pasture Subd. T.D. 6,681 ft.; perf. 6,418-28 ft.; pulling screen and lnr. to reset; sd. 6,297-6,380 ft.

Eleanor Oil Co. No. 1 W. W. Toland, sec. 15, Blk. A, Coleman-Fulton Pasture Subd. M.I.M.

Starr County

J. F. Anderson No. 1 Yzagierre, Tr. 1, Porc. 79, J. of Camargo. T.D. 2,910 ft.; S.D.; repairs.

H. L. Bass No. 1 Haden, 3,740 ft. S line 555 ft. W line, Sh. 47, Porc. 80. Drlg. 377 ft.

Bennett & Lowe No. 1 Guerra, 330 ft. SW line, 250 ft. NW line, sec. 293. Reinstated; drlg. 2,563 ft.

F. Davenport No. 1 Kelsey-Bass, 534 ft. S line, N 585-ac. tr., 2,856 ft. E line Porc. 87. Set 1,000 ft. of surf. csg.; cg. 3,932 ft.

Davenport-Slick-Urschel No. 1 Slick Est., Davenport ranch, sec. 485. Sd. 3,837-55 ft.; drlg. ahead 4,192 ft.

Double D Oil Co. No. 1 Kelsey-Bass, N½, Porc. 87. Drlg. 4,055 ft.

Leach & Mallott No. 2 Dana Est., Porc. 84, 2,100 ft. Rio Grande River. Drlg. 956 ft.

South Coast Oil Co. No. 1 Isabel Lopez, Sh. 40-B, Porc. 80. R.U.

Sun Oil Co. No. 1 Orr, 330 ft. N and W lines, Porc. 103. Loc.

Webb County

Ivan Howard No. 1 Frost Nat. Bank, Sur. 733. T.D. 2,051 ft.; S.D.

Lu-Tex Oil Co. No. 1 Lone Star, Porc. 13; (W.O.). T.D. 2,317 ft.; D.&A.

Mid-Continent Pet. Corp. and Oklahoma Co. of Texas No. 1 Laubscher, 330 ft. NE and NW lines, NW¼, sec. 1,394. Drlg. sh. 2,773 ft.

H. E. Nessley No. 1 Bruni Sur. 449, R.U.

Sackett & Keoghan No. 1 Wilmot, W 640-ac. tr., Sur. 201. Cg. 1,912 ft.

Zapata County

Gilcrease Oil Co. No. 1 Trevino, Blk. 5, sec. 3, Porcs. 2 and 3. Drlg. 1,912 ft.

Hill & Hill No. 1 Alexander, Porc. 25. Drlg. 3,058 ft.

S. W. TEXAS PROVEN

McCampbell—Aransas-San Patricio Counties

Atlantic Oil Prod. Co. No. 1 McCampbell, 330 ft. NE and NW lines, Lot 8, Blk. 41, Subd. 4. Cg. 6,433 ft.

J. Nelson No. 1 Riggs, 330 ft. NW line, 213 ft. SW line, 6.46-ac. tr., Trs. 12 and 13, Blk. 16. Loc.

Foley—Bee County

Dirks Bros. No. 1 Holzmark, 300 ft. W line, 990 ft. S line, 100-ac. tr., S. May Sur. R.U.

L. Glasscock No. 1 Strickland, 330 ft. W line, 485 ft. S line, C. Hodge Sur. Drlg. 1,166 ft.

Siznod Oil Corp. No. 1 Holzmark, 330 ft. W line, 990 ft. S line, 20-ac. tr., May Sur. T.D. 4,101 ft.; comp.; 65 B.P.D.; T.P. 950 lbs.; C.P. 1,200 lbs.

Plummer—Bee County

D. R. Semmes No. 1 Plummer, 450 ft. S and E lines, 40-ac. tr., Blk. 33, Cheesman Sur. 144. T.D. 3,309 ft.; D.&A.

Voss—Bee County

Devonian Oil Co. No. 2 Voss, 660 ft. N No. 1, S. May Sur. Pettus sd. 4,019-26 ft.; comp.; no gauge.

Humble O. & R. Co. No. 1 Wm. Voss, 330 ft. SW line, 990 ft. NW line, 101-ac. tr. Sd. 3985-89 ft.; comp.; no gauge.

Alta Mesa—Brooks County

California Co. No. 1 Mestina, 4,840 ft. N line, 4,185 ft. E line, B. Garcia tr. No. 5. R.U.

Nordan & Morris No. 4 Singer, Sur. 312. Loc.

Alta Verde—Brooks County

Dick Young No. 5 Singer, Blk. 12, Sur. 312. Drlg. 643 ft.

Colmena—Duval County

Conservative Oil Co. No. 3 D.C.R.C., N½, Blk. 17, Sur. 53. Set csg. on sd. 1,496-99 ft.; comp.; 75 B.P.D.

Driscoll—Duval County

Continental Oil Co. No. 12-A Sevier, Sur. 448. Loc.

El Mesquite—Duval County

Rogers & Rogers No. 2 Pena, El Mesquite Gr. T.D. 3,001 ft.; D.&A.

Government Wells—Duval County

Govt. Wells Oil Co. No. 20 Lundell, Sur. 60. Sd. 2,277-87 ft.; comp.; 70 B.P.D. on pmp.; T.D. 2,289 ft.

Highland Oil Co. No. 1 Hester, Sur. 47. M.I.M.

Magnolia Pet. Co. No. 10 Johnson, Sur. 44. Set csg. 2,326 ft.; comp.; 35 B.P.H.

Magnolia Pet. Co. No. 12 Johnson, Sur. 44. R.U.

Southwest Prod. Co. No. 3 Luptack, Sur. 41. M.I.M.

Southwest Prod. Co. No. 18 Wendt, SE¼, sec. 43, Sd. 2,385-90 ft.; comp.; 20,000,000 ft. of gas and spray of oil.

Hoffman—Duval County

Rogers & Rogers No. 7 Hoffman, Sur. 118. T.D. 2,892 ft.; drlg. plugs.

Kohler—Duval County

Humble O. & R. Co. No. 51 Kohler, 330 ft. S line, 1,650 ft. E line, Sur. 171. R.U.

Labbe—Duval County

Mills Bennett Prod. Co. and Stanolind C. & G. Co. No. 2 Yates, 330 ft. N and E lines, sec. 3. Spudded.

Stanolind and Mills Bennett No. 1 Yates, 2,149 ft. S line, 2,800 ft. W line, sec. 560. T.D. 3,391 ft.; D.&A.

Loma Novia—Duval County

Bridwell Oil Co. No. 14 Wm. Hubbard, Sur. 71. Sd. 2,736-52 ft.; comp.; 240 B.P.D.; open tbg.; T.D. 2,752 ft.

Bridwell Oil Co. No. 8-D Hubbard, Sur. 73. T.D. 2,865 ft.; D.&A.

Humble O. & R. Co. No. 56-B Hubbard Sur. 52. Comp.; 228 B.P.D.; T.D. 2,762 ft.

Humble O. & R. Co. No. 57-B Hubbard, Sur. 72. Drlg. 2,127 ft.

Humble O. & R. Co. No. 18 Ruiz, Sur. 553. W.O. pmp.; T.D. 2,780 ft.

Humble O. & R. Co. No 13-C Welder, Sur. 554. Spudded.

Magnolia Pet. Co. No. 46 Hahl, Sur. 67. T.D. 2,729 ft.; drlg. plugs.

Pitkin & Goldston No. 6 B.C.C., Sur. 57. Comp.; 442 B.P.D. on ⅝-in. ck.; sd. 2,595-2,630 ft.

Pitkin & Goldston No. 7 B.C.C., Sur. 57. R.U.

Rosan Oil Co. No. 4 Welder, SW¼, Sur. 71. No report.

Shell Pet. Corp. No. 10 Hubbard Sur. 77. Drk.; M.I.M.

Shell Pet. Corp. No. 17 Mendoza, Sur. 68. Comp.; 37.53 B.P.H. on ½-in. ck.; sd. 2,735-56 ft.

Shell Pet. Corp. No. 18 Mendoza, Sur. 68. R.U.

Wilson & Leach No. 1 Wright, Sur. 72. Sd. 2,584-2,601 ft.; comp.; 25 B.P.H. on ½-in. ck.

Wilson & Leach No. 2 Wright, Sur. 72. Drlg. wtr. well.

Loma Vista—Duval County

Pan American Pet. Co. No. 1-H Welder 330 ft. N and W lines, 160-ac. tr., Sur. 103. T.D. 3,006 ft.; hole bridged at 1,000 ft.; C.O.

Shell Pet. Corp. No. 1-B Welder, 330 ft. S line, 2,590 ft. W line, Sur. 69. T.D. 3,242 ft.; D.&A.

Peters—Duval County

Windsor Oil Co. No. 4-B Peters, 660 ft. N No. 3-B, 330 ft. E line, sec. 34. Sd. 2,585-2,601 ft.; comp.; 50 B.P.D.

Piedra Lumbre—Duval County

Texas Co. No. 20 D.C.R.C., Sur. 100. Sd. 1,955-73 ft.; set csg. 1,973 ft.; W.O.C.

Seven Sisters—Duval County

Atlantic Ref. Co. No. 11-E Welder, Sur. 381. T.D. 2,436 ft.; comp.; 18 B.P.H. on ¼-in. ck.

Atlantic Ref. Co. No. 12-E Welder, Sur. 381. Drlg. 2,026 ft.

Harvey & Henderson No. 1 Welder, Sur. 102. Govt. Wells sd. 2,440-63 ft.; tstd. S.W.

Humble O. & R. Co. No. 6 Badgley, Sur. 307. Sd. 2,520-30 ft.; set csg.; W.O.C.

Humble O. & R. Co. No. 29 Smith, Sur. 382. T.D. 2,437 ft.; comp.; 14 B.P.H.

Humble O. & R. Co. No. 30 Smith, Sur. 382. Sd. 2,419-33 ft.; set csg.; W.O.C.

Humble O. & R. Co. No. 13 Wright, Sur. 118. T.D. 2,531 ft.; W.O. pmp.

Illinois Pet. Co. No. 9 Hazelwood, Sur. 110. Sd. 2,208-20 ft.; comp.; 5 B.P.H.

Illinois Pet. Co. No. 1 Welder, Sur. 102. M.I.M.

Ed Leach No. 2 R. Serna, SE¼, Sur. 384. Comp.; 125 B.P.D. on ¾-in. ck.; T.D. 2,693 ft.

Ed Leach No. 1 Wright, Sur. 72. T.D. 2,-600 ft.; comp.; 25 B.P.H. on ½-in. ck.

Magnolia Pet. Co. No. 3 Neely, Sur. 220. T.D.; sd. 2,519 ft.; D.&A.

Wellington Oil Co. of Del. (Santa Clara No. 10-B Welder, Sur. 381. Comp.; 240 B.P.D. on 3/16-in. ck.; T.D. 2,447 ft.

Westheimer & Daube No. 18 Campos, Sur. 224. T.D. 2,779 ft.; S.D.; W.O.O.

Westheimer & Daube No. 19 Campos, Sur. 224. Comp.; 260 B.P.D. on ½-in. ck.; sd. 2,661-2,710 ft.

Westheimer & Daube No. 20 Campos, Sur. 224. Comp.; 12 B.P.H. on ½-in. ck.; sd. 2,678-2,729 ft.

Westheimer & Daube No. 21 Campos, Sur. 224. R.U.

North Pettus—Goliad County

Jane Oil Co. No. 11 Mudd, B.&B. Sur. Set sur. csg. 248 ft.; W.O.C.

H. H. Weinert, Inc., No. 3-B Lackey & Weldon, B. lse., J. Gomez Sur. Drlg. 1,-816 ft.

Mercedes—Hidalgo County

Union Sulphur Co. No. 10 American Rio Grande L. & I. Co., Blk. 50, Tr. 2,418, N. Caprisallo Dist. Cg. sh. 8,314 ft.

Mestanas—Hidalgo County

Pantana Pet. Co. No. 1 Harding, Lot 11, Blk. 94, Missouri-Kansas L. & I. Co., Subd. Mestanos Gr. Sd. 6,590-6,640 ft.; odor oil and gas; taking core 7,820-40 ft.; blew out of control and caught fire.

Samfordyce—Hidalgo County

Gem Oil Co. No. 3-A Seabury, Tr. 256, Porc. 38. Spudded.

Harrison-Danvers No. 1 Guerra, Tr. 251, Porc. 38. Cg. sd. 2,813 ft.

Harrison and Danvers No. 2-A Villalon, Tr. 252, Porc. 39. R.U.

Henshaw Bros. No. 2 Yturria, Tr. "B," E½ Porc. 100. Fsg. 1,050 ft.

Colorado—Jim Hogg County

J. H. Meek No. 2 A. Martinez, Lot 3, Sur. 623. Sd. 2,986½-95½ ft.; 15-min. D.S.T. 2,936-3,009 ft.; 15 ft. oil and mud; no W.P.; T.D. 3,101 ft.; fsg.

Esnne-Winch-Fariss—Jim Hogg County

Sam Payne No. 1 Holbien, 150 ft. N and W lines, Blk. 10, Share 3, Las Animas Gr. R.U.

Bentonville—Jim Wells County

La Jita Corp. No. 1 Frame Bowers, 330 ft. N and E lines, sec. 14. Sd. 5,338-40 ft.; comp.; no gauge; T.P. 575 lbs.; C.P. 900 lbs.

Lagita Corp. No. 2 Pope, SE¼, sec. 20. Drlg. 5,316 ft.

Calliham—McMullen County

Agarita Oil Co. No. 4 Lark, Scrugham Sur. T.D. 984 ft.; comp. 35 B.P.D.

Loma Oil Co. No. 45-A Jacob, Jacob Sur. No. 10. M.I.M.

Chicon Lake—Medina County

Chas. Wagener No. 8 Medina Irrigation Co., Hewitt Sur. Set csg. on sd. 278 ft.; drlg. plugs.

Ina—Medina County

Ina O. & R. Co. No. 3 Viola Wilson, Durst Sur. M.I.M.

Agua Dulce—Nueces County

Texon Drlg. Co. No. 1 Austin, Sh. 3, Chapman Subd. D.S.T. 5,675-80 ft.; recovered 400 ft. oil; W.P. 100 lbs.; brought in flw. 3-5 B.P.H. fluid, 60% oil, 40% wash wtr. on ⅛-in. ck.; T.P. 1,400 lbs.; C.P. 1,800 lbs.

Texon Drlg. Co. No. 1 Clara Driscoll Sevier, 466 ft. S and W lines, 880-ac. tr., W. W. Chapman Lds. M.I.R.

Texon Drlg. Co. No. 1 McCoy, Sh. 1, Palo Alto Part. Drlg. 5,816 ft.

Clara Driscoll—Nueces County

W. D. Hines No. 1 Sevier, 280 ft. S and E lines, W½, sec. 60. No report.

Hiram Reed No. 2 Roper, C Lot 1, Blk. E. Driscoll townsite. Set csg. 4,000 ft.; remctd. csg. to perf.

Wellington Oil Co. of Del. (Santa Clara) No. 1-A Sevier, Wm. Gamale Sur. Sd. 3,810-17 ft.; D.S.T. 2,000 ft. oil in 15 min.; set csg.; comp.; no gauge.

Flour Bluff—Nueces County

Barnsdall Oil Co. and Flour Bluff Corp. No. 2 Phillips, C Lot 12, sec. 55. Sd. 6,629-45 ft.; comp.; 19.8 B.P.D. on ⅛-in. ck.; sd. 6,580-6,645 ft.

Costa Oil Co. No. 1 Henderson, 530 ft. E line, 660 ft. S line, Lot 10, sec. 48. Sd. 6,595-6,642 ft.; S.O.; made gasser; killing to rework; R.P. 2,200 lbs.

Gem Oil Co. No. 2 Smith, sec. 47. Drlg. 236 ft.

Humble O. & R. Co. No. 1 Edwards, C Lot 24, Blk. 48. R.U.

Humble O. & R. Co. No. 2 Phillips, C Lot 2, Blk. 48. R.U.

Humble O. & R. Co. No. 1 Rankin, C Lot 27, Blk. 47. Drlg. 375 ft.

Humble O. & R. Co No. 1 Robertson, C Lot 23, Blk. 47. Drlg. 1,130 ft.

S. Paul No. 1 Moulter, Blk. 16, sec. 41, Encinal Garden tracts. Loc.

Saxet Heights—Nueces County

Booth et al No. 1 Wilson Realty Co., cen. Lot 28, Country Club Place. Set sur. csg.; drlg. plugs.

J. K. Culton No. 7 Baldwin, 250 ft. S, 125 ft. W, Republic No. 5-B. Sd. 4,075-93 ft.; set csg.; W.O.C.

J. A. Lavender, No. 1 Long, C 1-ac. tr., Blk. 3, Ellendale Gardens No. 3. Sd. 4,-073-86 ft.; comp.; 76 B.P.D. on ⅛-in. ck.; C.P. 1,350 lbs.

C. F. McGrew No. 2 Kelly, 19.3-ac. tr. Sd. 4,047-85 ft.; set csg. 4,071 ft.; W.O.C.

Morgan Bros. No. 2 Benner, Blk. C, Harbor View Estates. T.D. 4,085 ft.; failed to flow; S.D.

W. N. Paul No. 2 Schallert, cen. Blk. "C," Harbor View Addn. S.D. 1,800 ft.; W.O.

Pedernal Oil Co. No. 1 John, Blk. 14, Oak Park Addn. S.D. 4,110 ft.; orders.

Pedernal Oil Co. No. 1 McCaughan, cen. Plk. 17, Oak Park Addn. Set surf. csg. 500 ft.; S.D.

Port O. & G. Co. No. 1 Corpus Christi College, 39.6-ac. tr. Sd. 4,070-86 ft.; comp.; 180 B.P.D.

Port O. & G. Co. No. 6 Gibson, Blk. D, Harbor View Est. Sd. 4,057-67 ft.; set csg. 4,067 ft.; comp.; no gauge.

Power Prod. Co. No. 1 Savage, cen. 1-ac. tr., Country Club Addn. Drlg. 2,685 ft.

J. D. Proctor No. 1 Simonton, 100 ft. E line, 68 ft. N line, 1-ac. tr., Lots 46 and 47, Country Club Pl. Sd. 4,070½-83 ft.; set csg.; completing.

Renwar Oil Corp. and Maryland Corp. No. 1 Guaranty Title & Trust Co., Lot 9, Blk. 2, Villa Gardens Addn. Drlg. 2,-027 ft.

Renwar Oil Corp. and Maryland Corp. No. 5, Guaranty Title & Trust Co., Lot 9, Blk. 12, Villa Gardens. Comp. est. 100 B.P.D.; sd. 4,074-79 ft.

Saxet O. & G. Co. No. 1 Edwards, 32-ac. tr. S.D. 4,073-79 ft.; set csg. 4,080 ft.; attempting to comp.

Taylor Pet. Co. No. 3 Dunn, 52.73-ac. tr. Drk.

Taylor Pet. Co. No. 1 Incarnate Word Academy, 40-ac. tr., Villareal Sur. Sd. 4,044-63 ft.; set csg. 4,045 ft.; cg. deeper.

W. A. R. Oil Co. No. 2 Dunn, 53-ac. tr., Villareal Sur. Drlg. 2,493 ft.

Sam Wilson No. 1 Blucher, Lot 19, Blk. 2, Oak Park Addn. Set. surf. csg.; W.O.C.

Saxet—Nueces County

C. Andrade No. 2 Frank, 28.3-ac. tr., Sur. 416. Drlg. 843 ft.

R. B. Bryant No. 4 Frank, 330 ft. N and W lines, 40-ac. tr., Sur. 416. Drlg. 5,-585 ft.

R. B. Bryant No. 3 Scoggin, 20-ac. tr., Sur. 316. Drlg. 3,729 ft.

Conroe Drlg. Co. No. 7 Bliss, 330 ft. N and E lines, 80-ac. tr. Drlg. 3,225 ft.

Great States Oil Co. and Violet Oil Co. No. 2 McGregor-Belk, Sur. 311. Drlg. 5,430 ft.

Great States Oil Co. and Violet Oil Co. No.5 McGregor-Belk, Sur. 311. Sd. 5,330-37 ft.; tstd. S.W.; rmg.

Hiawatha Oil Co. No. 1 Hutchins-Stillwell, 175 ft. W line, 1,200 ft. S line, Sur. 311. Stdg. 4,257 ft.

Hiawatha Oil Co. No. 3-A Smith, Blk. 35, Sheppard Farm Lots. Spudded.

Hiawatha Oil Co. No. 1-B Smith, Sur. 311. T.D. 5,896 ft.; sd. 5,839-96 ft.; comp.; 236 B.P.D. on 5/32-in. ck.

Hinton No. 3 Cole, 330 ft. N and E lines, 59-ac. tr., Villareal Gr. Set surf. csg.; W.O.C.

Holliday Oil Co. No. 5 Griffith, 330 ft. N line, 2,424 ft. E line, 100-ac. tr., Frank Sur. Sd. 5,813-40 ft.; comp.; 280 B.P.D. on 5/32-in. ck.; T.P. 800 lbs.; C.P. 1,-000 lbs.

Howell & Hawkins No. 1 Page Bros., 50-ac. lse., Sur. 416. T.D. 6,809 ft.; set csg. 6,492 ft.; tstd. S.W.; squeeze job.

Houston Oil Co. No. 2-A fee, 23.6-ac. tr. Drlg. 4,756 ft.

Houston Oil Co. No. 5-A Harrell, 660 ft. S of No. 3-A, Blk. 19, Sheppard Farm Lots. Sd. 4,532-40 ft.; comp.; 194 B.P.D. on 7/32-in. ck.

Houston Oil Co. No. 8 McGregor, 135-ac. tr., Sur. 582. Drlg. 4,996 ft.

Houston Oil Co. No. 9 McGregor, 135-ac. tr., Sur. 582. Drk.

Houston Oil Co. No. 13 Rand Morgan, 494-ac. tr. Set csg. 201 ft.; W.O.C.

Magnolia Pet. Co. No. 3 Walton, Villareal Sur. Set csg. 4,852 ft.; drld. plugs to 4,-876 ft.; C.O.

Mills Bennett Prod. Co. No. 2 Kassner, 100-ac. tr., SE¼ Sur. 409. R.U.

North Star Oil Co. No. 3-G Morgan, B.S. &F. Sur. Sd. 5,799-5,815 ft.; set csg.; W.O.C.

Oso Drillers, Inc., No. 4 Roark, 660 ft. E line, 1,200 ft. S line, 106-ac. tr. R.U.

Pan American Prod. Co. No. 1-D Morgan, SW¼, Sur. 405. Sd. 4,723-28 ft.; test failed; drlg. 5,855 ft.

Pan American Prod. Co. No. 2-A Sagarin, 1,000 ft. W line, 330 ft. N line, 89.57-ac. tr. Set csg. 160 ft.; W.O.C.

Pan American Prod. Co. No. 2-F Rand Morgan, E½, NW¼, sec. 405. Drlg. 2,-124 ft.

Phillips Pet. Co. No. 4 Morgan, 193 ft. W line, 330 ft. S line, 60-ac. tr., Sur. 405. Stdg. 3,813 ft.

Phillips Pet. Co. No. 5 Morgan, 60-ac. tr. E½, SE¼, sec. 405. Sd. 5,895-5,936 ft.; drld. plugs; C.O.

Renwar Oil Corp. No. 3 R. Morgan, 60-ac. tr., Sur. 315. Set 10¾-in. csg.; W.O.C.

Republic Nat. Gas Co. No. 14 Dunn, Blk. 37, Sheppard Farm Lots. Drlg. 2,217 ft.

Richardson Pet. Co. No. 2 Cain et al, Blk. 23, Russell Farm Lots. Drlg. 3,265 ft.

Richardson Pet. Co. No. 2 Quiros, Blk. 40, Sheppard Farm Tr. (W.O.). P.B.T.D. 4,-798 ft.; old T.D. 4,879 ft.; M.I.M.

Roesto Drlg. Co. No. 2 Harmon, 20-ac. tr., Sur. 416. Drlg. 4,635 ft.

Southern Minerals Corp. No. 14 Bliss, 120-ac. tr., Stevens Sur. Sd. 5,817-29 ft.; comp.; no gauge; T.P. 650 lbs.; C.P. 1,-200 lbs.

Southern Minerals Corp. No. 17 Bliss, 120-ac. tr., Stevens Sur. Drlg. 1,236 ft.

Southern Minerals Corp. No. 18 Bliss, 120-ac. tr., Stevens Sur. Sd. 5,809-30 ft.; set csg.; W.O.C.

Southern Minerals Corp. No. 6 Isensee, 330 ft. N line, 990 ft. W line, 235-ac. tr., C. Land Sur. 404. Drlg. in sdtrkd. hole 5,-140 ft.

Southern Minerals Corp. No. 7 Ocker, 202-ac. tr., Land Sur. Sd. 4,857-61 ft.; drld. plugs; C.O.

Southern Minerals Corp. No. 1 Till, 990 ft. S line, midway E and W lines, 52.6-ac. tr., Page Lands Sur. Drlg. 4,065 ft.

Texon Drilling Co. No. 2 Isensee, 150 ft N line, 112 ft. W line, 13.44-ac. tr., C. Land Sur. 404. Spudded.

Texon Drlg. Co. No. 3 McElroy, 40-ac. tr., Thos. Gallagher Sur. Drlg. 3,027 ft.

Texon Drlg. Co. No. 1 Ocker, Sur. 404. Sd. 4,434-43 ft.; comp.; 175 B.P.D. on 3/16-in. ck.; T.D. 4,457 ft.

Texon Drlg. Co. No. 4 Ocker, 160-ac. tr., Surs. 402 and 316. Set conductor csg.; W.O.C.

W.A.R. Oil Co. No. 1 Buckholt, Lot 4, Buckholt Partition. Set csg.; T.D. 4,585 ft.; perf. 4,448-51 ft.; comp.; 148 B.P.D. on 5/32-in. ck.; C.P. 600 lbs.; T.P. 175 lbs.

W.A.R. Oil Co. No. 2 Buckholt, Lot 4, Buckholt Part. M.I.M.

Wynne Drlg. Co. and Coker No. 2 Morgan, 160-ac. tr., G.S.&F. Sur. Sd. 4,560-67 ft.; S.D.

Wynne & Coker No. 1 Morgan, 160-ac. tr., Sur. 315. Drlg. sh. 5,523 ft.

Plymouth—San Patricio County

Contennial Oil Co. No. 2 State of Texas, Tr. 3, sec. 48. Comp.; no gauge.

Magnolia Pet. Co. No. 9 C. C. Banks, Fessendon & Hunter Sur. Drlg. 4,997 ft.

Plymouth Oil Co. No. 61-C Welder, sec. 49 T.D. 4,988 ft.; fsg.

Plymouth Oil Co. No. 62-C Welder, sec. 71. R.U.

Plymouth Oil Co. No. 64-C Welder, sec. 71. set surf. csg. 383 ft.; S.D.

Sun Oil Co. No. 3 Rosson, Lot 2, Sec. 35. Comp.; no gauge.

Sun Oil Co. No. 2 Rountree, Blk. 34. Drlg. 5,855 ft.

Taft Field—San Patricio County

Atlantic Oil Prod. Co. No. 1 Pullin, 40-ac. tr., Lot 4, Blk. 1, 2nd Addn. Loc.

Conroe Drlg. Co. No. 5 Pullin, Lot 4, sec. 1. Spudded in.

Humble O. & R. Co. No. 7 Mayo, 150 ft. S and E lines, 640-ac. tr., Ottman Sur. Drk.

Humble O. & R. Co. No. 9 Mayo, 540-ac. tr., Ottman Sur. R.U.

Humble O. & R. Co. No. 10 Mayo, Wm. Burns Sur. T.D. 4,907 ft.; reworking.

Shell Pet. Corp. No. 4 Pullin, Lot 1, Blk. 4, Second Addn. Tstg. 4,904-20 ft.

White Point—San Patricio County

Earl Calloway No. 1 White Point Dev. Co., 330 ft. E line, midway N and S lines, G Seguin Sur. No. 5. T.D. 6,512 ft.; P.B. 4,900 ft. to test sd. 4,900-15 ft.

Margo—Starr County

A. A. Kelly No. 1 Gonzales, Sh. 62, Porc. 71. Sd. 346-49½ ft.; tstd. gas; S.D. 370 ft.

J. W. Richards No. 1 Garcia, Sh. 7-B, Porc. 71. Set csg. 300 ft.; W.O.C.

Rio Grande City—Starr County

Sam Adams No. 1 Garza, Sh. 20-A, Porc. 80. No report.

Coretz Oil Co. No. 5 Doyno, Blk. 1, Tr 77-A, Porc. 81. Spudded; S.D.

Fech Oil Co. No. 1 Davis, 150 ft. S and W lines, Blk. 15, Tr. 78, Porc. 8. Sd. 1,395-1,400 ft.; comp.; pmpg. 3-5 B.P.D.

Moss & Bass No. 3 Doyno, Blk. 3, Tr. 77-A, Porc. 81. Drlg. 1,325 ft.

Santo Domingo—Starr County

John Clopton No. 4 Roos & Bennett, 330 ft. S and W lines, Blk. 5, Porcs. 91-92. T.D. 2,980 ft.; D.&A.

Carolina-Texas—Webb County

E. J. Sawyer No. 2 Webster, 330 ft. S line, 1,980 ft. W line, Sur. 684. S.D. 2,600 ft.

Cole—Webb County

L. H. Sexton No. 1 R. Benavides, Blk. 4, Sur. 22, Cole Subd. Drlg. 561 ft.

Lopez—Webb-Duval Counties

Cox & Hamon No. 7 Peal, Sur. 795. Comp.; 15 B.P.H.; T.D. 2,173 ft.

Cox & Hamon No. 4 Peters, Sur. 327. Sd. 2,097-2,117 ft.; tstg.

Cox & Hamon No. 7 Peters, Sur. 322. Drlg. 2,115 ft.

C. H. Lewis No. 8 Lopez, Sur. 110. Sd 2,-258-64 ft.; comp. 360 B.P.D. on ½-in. ck.

Magnolia Pet. Co. No. 15 Peal, Sur. 383. Drlg. 657 ft.

Magnolia Pet. Co. No. 16 Peal, Sur. 383. Sd. 2,159-64 ft.; comp.; 50 B.P.D.

Magnolia Pet. Co. No. 17 Peal, Sur. 383. Sd. 2,096-2,118 ft.; T.D. 2,168 ft.; P.B. 2,066 ft.; perfg. 2,096-2,106 ft.; for comp.

Mills Bennett Prod. Co. No. 8 M. Lopez, Sur. 73. M.I.M.

Mills Bennett Prod. Co. No. 3 Montemayor, Sur. 114. Comp.; 480 B.P.D. on ½-in. ck.; T.D. 2,212 ft.

Mortimer & Springer No. 4 J. Lopez, Sh. 10-B, Sur. 73. Sd. 2,181-93 ft.; comp.; 20 B.P.H. on ½-in. ck.

Mortimer & Springer No. 10 J. Lopez, Sur. 73. Drlg. 260 ft.

Mortimer & Springer No. 6-B Peal, Sur. 796. Drlg. 425 ft.

Mortimer & Springer No. 5 Paula Vela, Sur. 114. T.D. 2,208 ft.; comp.; 15 B.P.H. on ½-in. ck.

Mortimer & Springer No. 7 Paula Vela, Sh. 8-C, Sur. 114. Drlg. 1,727 ft.

Superior Oil Co. No. 10 Billings, Sur. 109. Drk.

O'Hern—Webb County

Cole Pet. Co. No. 1 Benavides, Blk. 483, Hale Subd. Tstd. S.W. 2,845 ft.; W.O.C.

Hamill & Smith No. 9 Benavides, Blk. 435, Hale Subd. Sd. 2,943 ft.; comp.; 25 B.P.H. on ⅛-in. ck.

Hamill & Smith No. 10 Benavides, Hale Subd. Drlg. 2,425 ft.

Hamil & Smith No. 27 Benavides, Blk. 499, Hale Subd. R.U.

Hamill & Smith No. 31 Benavides, Blk. 497, Hale Subd. Sd. 2,928-41 ft.; comp.; 480 B.P.D. on ⅜-in. ck.

Magnolia Pet. Co. No. 12 Seacord-Benavides, Blk. 5, Hale Subd. Sd. 2,858-70 ft. set csg.; W.O.C.

H. J. Porter et al No. 2 S. Benavides, Blk. 386, Hale Subd. Sd. 2,909-19½ ft.; comp.; 124 B.P.D. on ¼-in. ck.

T. S. Reed No. 2 Benavides, Blk. 290, Hale Subd. Cg. 2,880 ft.

H. M. Reed No. 3 S. Benavides, Blk. 347, Hale Subd. Cg. 2,938 ft.

Starr Dev. Co. No. 1 Benavides, 330 ft. N and W lines, Sur. 173. M.I.M.

Escobas—Zapata County

Texas Co. No. 93 Whitehead, Tr. 1-D, Cerrito Blanco Gr. Drlg. sdy. sh. 2,466 ft.

Haynes—Zapata County

Clover O. & G. Co. No. 24 Haynes, Blk. 7, Haynes Subd. M.I.M.

Gilcrease Oil Co. No. 6-C Haynes, Blk. 8, Haynes Subd. Comp.; 61 B.P.D.; sd. 826-48 ft.

Mid-Continent Pet. Corp. No. 6 Haynes, Blk. 8, Haynes Subd. Sd. 855½-72 ft.; comp.; 61 B.P.D.

Nordan & Morris No. 14-A Haynes, Blk. 7, Haynes Subd. M.I.M.

EAST TEXAS

(Border Counties)

Bowie County

Woodley & Bentley No. 1 Lumpkin, J. McDermott Sur. S.D. 3,570 ft.

Cass County

American Lib. No. A-3 Baugus, J. H. Rives Sur., Lot 12. Loc.

American Liberty No. 1 Dawson et al, on Dawson tr., J. H. Rives Sur. Drlg. 3,142 ft.

American Liberty No. 1 Sheppard, J. H. Rives Sur. Drlg. 4,700 ft.

American Liberty No. 1 J. Wiley, SE cor. 58.86-ac. tr., J. Davenport Sur. Drlg. 1,400 ft.

Bay Oil Co. No. 1 G. E. Parker, SE cor. Greenham Sur. Drlg. 4,550 ft.

Gulf Prod. Co. No. 1 Dawson et al, NE cor. of tr., J. H. Rives Sur. Drlg. 2,019 ft.

Herman L. Brown No. 2 R. P. Willis, on 81½-acre trk. in Robert Trammel Sur. Loc.

Herman L. Brown No. 7 R. P. Willis, Robt. Trammel Sur. Comp.; flw. 500 bbls. 14 hrs., ¾-in. tb. ck. T.D. 6,073 ft.

H. L. Hunt No. 1 I.N.&C.L. Shelton, SE cor. 202-ac. tr., J. Davenport Sur. Drlg. 2,250 ft.

W. F. Lacey et al No. 2 Baughs, J. H. Rives Sur. 7-in. cmt. 6,009 ft. T.D. 6,032 ft. W.O.C.S.

Magnolia Pet. Co. No. 2 J. E. George, NE cor. John Collum Sur. Comp.; flw. 32 B.P.H. ⅝-in. tb. ck. T.D. 6,078 ft.

Magnolia Pet. Co. No. 3 J. E. George, SW cor. John Collum Sur. Comp.; flw. 10 B.P.H. ⅛-in. tb. ck. T.D. 6,129 ft.

Magnolia Pet. Co. No. 4 J. E. George, NE

THE UNIVERSITY OF NEBRASKA

cor. 141-ac. lse., John Collum Sur. Drlg. 6,004 ft.

Magnolia No. 5 J. E. George, SW cor. John Collum Sur. Drlg. 3,405 ft.

Magnolia No. 6 J. E. George, SW cor. John Collum Sur. Drlg. 3,317 ft.

Magnolia No. 7 J. E. George, SE cor. John Collum Sur. Loc.

Magnolia No. 8 J. E. George, SE cor. John Collum Sur. Loc.

Magnolia No. 1 Meda Green, SW cor. J. Davenport Sur. Drk.

Magnolia No. 2 Meda Green, SW cor. J. Davenport Sur. Drlg. 2,090 ft.

Magnolia No. 4 Meda Green, on Jesse Baugus 60-ac. tr., J. Davenport Sur. Loc.

Magnolia No. 8 A. S. Hall, SE cor. James Young Sur. 16-in. cmt. 240 ft. W.O.C.S.

Magnolia Pet. Co. No. 4 Haywood, SW cor. Haywood Tr., John Collum Sur P.B. to 4,946 ft. to sidetrack bit.

Magnolia Pet. Co. No. 4 J. J. Moore, J. Collom Sur., 330 ft. N, 418 ft. W, SE cor. 118-ac. tr. P.B. to 6,025 ft. and perf.; W.O.C.S.

Magnolia No. 1 Noel Estate, NE cor. Wm. B. Hughes Sur. Drlg. 2,740 ft.

Magnolia Pet. Co. No. 5 Rives, SE cor. John Collum Sur. Drlg. 5,212 ft.

Magnolia No. 6 Rives, SW cor. 425-ac. tr., Robert Trammel Sur. Drlg. 3,350 ft.

Magnolia No. 7 Rives, NE cor. John Collum Sur. Loc.

Magnolia No. 8 Rives, NE cor. John Collum Sur. R.U.

Magnolia No. 9 Rives, NE cor. John Collum Sur. Drk.

Marathon Oil Co. No. 3 R. P. Willis, 660 ft. S of Superior A-1 Chew, S.F.I.W. Sur. Fsg. for bit 5,975 ft.

R. W. Norton No. 3 A. S. Hall, NW cor E. E. Hill 60-ac., John Collum Sur. T.D. 6,097 ft.; S.D. will rework.

R. W. Norton No. 2 J. T. Moore, 940 ft. W of No. 1, Wm. R. Myers Sur. Drlg. 3,020 ft.

Ohio Oil Co. No. 4 R. P. Willis, S.F.I.W. Sur. Drlg. 1,220 ft.

Chio Oil Co. No. 5 R. P. Willis, S.F.I.W. No. 1263 Sur. Loc.

Ohio Oil Co. No. 6 R. P. Willis, 1,226 ft. SE of No. 2, S.F.I.W. No. 1,263 Sur. Drlg. 1,625 ft.

Ohio Oil Co. No. 7 R. P. Willis, S.F.I.W. No. 1,263 Sur. Loc.

Ohio Oil Co. No. 10 R. P. Willis, 933 ft. S of No. 4, S.F.I.W. No. 1,263 Sur. Drk.

Phillips Pet. Co. No. 1 G. E. George, Wm. R. Myers Sur. Drlg. 1,120 ft.

Phillips Pet. Co. No. 1 Skinner, Hutchinson tr., S.F.I.W. No. 1,025 Sur. Loc.

Phillips Pet. Co. No. 2 Skinner, Hutchinson tr., S.F.I.W. No. 1025 Sur. Loc.

Phillips Pet. Co. No. 1 Wartzbaugh, Robt Trammel Sur., 431 ft. S of N line and 490 ft. W of E line. Csg. 6,015 ft.

Phillips Pet. Co. No. 2 Wartzbaugh, Robt Trammel Sur., 134 ft. S of N line and 496 ft. W of E line. 7-in. cmt. T.D. 6,032 ft. W.O.C.S.

Phillips Pet. Co. No. 3 Wartzbaugh, 438 ft. N and midway between E and W line of lse., Robt. Trammel Sur. Drlg. 4,451 ft.

Phillips Pet. Co. No. 1 M. Wasson, W. R. Myers Sur., 27-acre trk. Loc.

Showers & Moncrief No. 5 T.H. and Sallie Stalcup, Robt. Trammel Sur. Drlg. 2,050 ft.

Showers & Moncrief No. 6 T. D. and Sallie Stalcup, Robt. Trammel Sur., 330 ft. S and 1,338 ft. W line, Loc.

Showers & Moncrief No. 8 T. D. and Sallie Stalcup, Robt. Trammel Sur., midway between E and W line of lse. Loc.

Superior Oil No. 5-A Chew, W.D.&C.C. Track, Robt. Trammel Sur. Stg. crooked hole, T.D. 2,900 ft.

Superior Oil No. 6-A, SW cor. Chew tr. Robt. Trammel Sur. Comp.; flw. 305 bbls. 24 hrs. T.D. 5,988 ft.; ¼-in. tb. ck.

Texas Co. No. 1 W. M. Hall, A. Archer Sur. Drlg. 4,030 ft.

Texas Co. No. 2 W. M. Hall, Alex Archer Sur., 664 ft. W of E line. Loc.

Texas Co. No. 3 W. M. Hall, Alex Archer Sur., 665 ft. W of E line and 675 ft. S of No. 2 Hall. Loc.

Texas Co. No. 4 W. M. Hall, Alex Archer Sur., 665 ft. W of E and 337 ft. N of S line of 164-acre trk. Loc.

Texas Co. No. 1 J. B. McLeod, W. A. Elliott Sur., 1,416 ft. W of E and 466 ft. S of N, 160-ac. trk. Loc.

Texas Co. No. 2 J. B. McLeod, W. A. Elliott Sur., 440 ft. E of W and 495 ft. S of N line of 160-acre trk. Loc.

Tide Water No. 1 W. D. Chew, Robt. Trammel Sur., 150 ft. N of S line, midway between E and W lines of 20-ac. lease. Derrick.

Tide Water No. 1 W. D. Chew, on 55-ac tr., Robt. Trammel Sur. 7-in. cmt 5,998 ft. T.D. 6,016 ft. W.O.C.S.

Tide Water No. 2 C. C. Chew, Robt Trammel Sur., 20-ac. tr. Comp.; flw. 509 bbls. 24 hrs, ½-in. tb. ck. T.D. 5,977 ft.

Tide Water No. 2 C. C. Chew, on 55-ac. tr., Robt Trammel Sur. R.U.

United Prod. Co. No. 1 Bewley, H. Holbert Sur., 330 ft. S and W NW cor. of Susie Chatten 160-acre trk. Loc.

United Prod. Co. No. 2 Bewley, 467 ft. N and W of So. SW cor. George 200-acre trk. Loc.

United Prod. Co. No. 3 J. R. Jones, Ben J. Murray Sur. Loc.

United Gas No. 4 J. R. Jones, 502 ft. N, 3,420 ft. W. SE cor. Ben J. Murray Sur. Comp.; flw. 57 B.P.H. ¾-in. tb. ck. T.D. 6,050 ft.

United Gas No. 5 J. R. Jones on 18-ac. tr., John Collum Sur. 7-in. cmt. 6,014 ft. T.D. 6,065 ft. W.O.C.S.

United Prod. Co. No. 1 Rambo Unit, Robt. Trammel Sur., 330 ft. N and W SE cor. Maden Rambo 40-ac. trk. Loc.

United Prod. Co. No. 2 Rambo Unit, 330 ft. S 385 ft. W NE cor. Maden Rambo 25-ac. trk., Robt. Trammel Sur. Loc.

United Prod. No. 3 Rambo Unit, 385 ft. W of westerly SW cor. of Stalcup trk., Robt. Trammel Sur. Loc.

United Prod. No. 4 Rambo Unit, 330 ft. S and 385 W NW cor. Stalcup 20-ac. trk., Robt, Trammel Sur. Loc.

United Prod. No. 5 Rambo Unit, Robt. Trammel Sur., 150 ft. N and 311 ft. W of SE cor. H. A. Trammel 183-ac. trk. Loc.

United Prod. No. 6 Rambo Unit, Robt. Trammel Sur., 150 N. 814 W SE cor. H. A. Thomas 83-ac. trk. Loc.

United Prod. Co. No. 4 F. S. Simpson, on 160-ac. tr., James Young Sur. Testing. T.D. 6,071 ft.

United Prod. Co. No. 7 J. T. Stewart, M. Stewart 49-ac. lse., John Collum Sur. Drlg. 2,700 ft.

United Prod. No. 8 J. T. Stewart Unit, John Collum Sur. of 81.9-ac. trk. Loc.

United Prod. Co. No. 1-A J. T. Wall, Alex Archer Sur. on Wall 82 ac. tr. Drlg. 5,408 ft.

United Prod. Co. No. 2-A J. T. Wall, Alex Archer Sur. on Wall 82-ac. tr. Drlg. 4,410 ft.

United Prod. No. 3-A J. T. Wall, Alex Sur., on J. T. and J. D. Wall 82-ac. trk. Loc.

United Prod. No. 4-A J. T. Wall, Alex Sur., on J. T. and J. D. Wall 82-ac. trk. Loc.

Harrison County

W. F. Bridewell et al No. 1 Clapp, F. C. Baker Sur. T.D. 5,167 ft; S.D.

Geyer Oil Co. No. 2-A Vincent, S. B. Harrison Sur. Drlg. 2,000 ft.

Hanover, Bergendoll et al No. 1 Buchanan, Wm. McIlvain Sur. Drlg. 4,170 ft.

Marion County

Tom Bell et al No. 1 David Lane, SW C Log 2 Jones Sur. 12-in. cmt. 72 ft. W.O.C.S.

Panola County

Danciger O. & R. Corp. No. 1 Tatum, SW cor. A. Bissell Sur. Cellar.

A. C. Glassell No. 1 Frost Lbr. Industries SW cor. Mary S. Potts Sur. T.D. 6,002 ft.; perf. csg. 5,650 ft. and testing; showing gas and dist.

Gulf Oil Corp. No. 1 Pierce & Chesbro, J. H. Shahan Sur. Drlg. 5,374 ft.

Logansport P. L. Corp. No. 1 Rusning, W. Smith Sur. Show 2,582-2,600 ft.; T.D. 2,774 ft.; prep. run 7-in.

Magnolia Pet. Co. No. 1 E. A. Hull, T. Applewhite Sur. T.D. 470 ft.; laying water line.

Matex Oil Co. No. 1 Thomas M. Alstone, 3 mi. E of Elysian field. M.I.M.

Shelby County

F. E. Mulroy et al No. 1 C. A. Hayden in the D.T.F. York Sur. T.D. 2,200 ft. S.D.

Potter & Rubeling G. H. Polly No. 1, Wm Wisner Sur. T.D. 4,050 ft.; M.I.H.R.

Red Wing Oil Co. No. 1 C. H. Herton, 54-ac. tr. in J. Dowlin Sur. S.D. 1,186 ft., cor. depth.

NORTH TEXAS WILDCATS

Archer County

Archer Drlg. Co. No. 1 A. L. Harris. Blk. 60, Harris Subd. Drlg. 1,050 ft.

Archer Drlg. Co. No. 1 L. F. Wilson, sec. 32, A.T.N.C.L. Sur, R.U.R.

Bridwell Oil Co. No. 1 Wilson, sec. 117, A.T.N.C.L. Sur. Loc.

Clark & Mayfield No. 1 W. H. Taylor, sec. 17, A.T.N.C.L. Sur, R.U.R.

W. W. Houston No. 1 P. J. Forcher, sec. 13, H.&T.C. Sur Loc.

Luggenheim et al No. 1 W. T. Waggoner, sec. 3, H.&T.C. Sur. Drlg. 1,550 ft.

Rathke Oil Co., No. 1 G. P. Meade, sec. 39, "L.&M." pasture. Drlg. 1,425 ft.

Clay County

Alexander & Goldsmith No. 1 Byers & Co., sec. 28, Byers Subd. Drk.

Collin County

California Consld. Oil Co. No. 1 Fagg, Jas. Rutherford Sur. Spud and S.D.; wtr.

Port Bolivar O. & R. Co. No. 1 Durning, Wm. Creegar Sur. S.D. 4,065 ft.

Port Bolivar O. & R. Co. No. 1 A. Sherley, G. Starke Sur. Loc.

Sorrell et al No. 1 D. R. Clark, J. Rowland Sur. Drk.

Cooke County

Big Indian O. & D. Co. No. 1 T. E. McFadden, G. M. Bonds Sur. A-69. Drlg. 1,400 ft.

Cain & Chandler No. 1 J. B. Burch, J. M. Williams Sur. A-658. S.D. 1,956 ft.

R. W. Fails No. 2 Powell, Wm. McClelland Sur. A-752. Drlg. plug.

Gratz & Wilson No. 1 Dennis, S. Hernandez Sur. A-437. Drlg. 190 ft.

B. H. Hilburn No. 1 W. A. Harris, J. Harris Sur. A-502. Drlg. 780 ft.

Long & Wolf No. 1 Hopkins, B.B.B.&C. Sur. A-150. Drlg. 1,400 ft.

C. Newburn No. 1 P. G. Dotson, W. Campbell Sur. A-238. S.S.O. 2,093-2,100 ft.; will test.

Reed et al No. 1 V. D. Randall, J. Redman Sur. Bailing.

E. R. Robison No. 1 J. Krebs, H. Wilkey Sur. A-1,090. S.D. 2,130 ft.

Ruwaldt-Couch No. 1 Stacy, J. Clark A-194. Drlg. 1,626 ft.

Sinclair Prairie Oil Co. et al No. 2 A. C McCall, H. White Sur. A-1,134. Drlg. 6,078 ft.

Skelly Oil Co. No. 1 Field & Bowers, J. Dye Sur. A-140. Drlg. 735 ft.

Denton County

J. C. Foster No. 1 Jeffcoat, J. West Sur. Drk.

Manning & Moore No. 1 E. L. Darnell, J. Walters Sur. A-1,329. Swbd. salt wtr. and trace oil 2,505-12 ft.; P.B. to 2,067 ft.

Fannin County

Sam W. Ball No. 1 A. G. Ayers, W. J. Bailey Sur. Drlg. 200 ft.

Grayson County

Olson et al No. 1 D. R. Uitger, P. P. Cady Sur. A-301. Drlg. 250 ft.

Pete Shanel No. 1 Blair, R. H. Deavers Sur. A-313. S.D. 2,000 ft.; repairs.

Jack County

Bryson O. & G. Co. No. 1 O. Loving, T.& N.O. Sur. A-852. R.U.R.

W. B. Hammon No. 1 G. E. Evett, B Plaster Sur. 6⅝-in. csg. 2,987 ft.; W.O.C.

Harper Pet. Corp. No. 1 G. F. Brown, S. M. Holderness Sur. A-1,532. Drlg. 2,010 ft.

L. A. Long No. 1 Smith, S.P.R.R. Sur. A-552. Drlg. 2,845 ft.

States Oil Corp. No. 1 J. Lowe J. Hudson Sur. A-256. S.S.O. 3,293-3,305 ft.; testing.

Joe A. Worsham No. 1 Lowe, S. Crook Sur. A-148. T.D. 3,135 ft.; S.D.O.

Montague County

H. Bost No. 1 Lemon, S. Little A-417. Machine on ground.

Clark-Beckner No. 1 C. W. Bell, sec. 6, M.E.P.&P. Sur. Drk.

T. P. Frost No. 1 Johnson, sec. 6, E.T. R.R. Spudded and S.D.

W. E. Halbert No. 1 Petty, S. A. Southerland A-992. Spud. and S.D.

L. C. Heydrick No. 1 Cliff Dowd, G. W. Browning Sur. A-1,274. Spud. & S.D.

Jim Seeds et al No. 1 Coombs, sec. 55, M.E.P.&P. Sur. S.D.O. 2,340 ft.; C.O.

Thompson et al No. 1 John W. Holmes, Jas. B. Miller Sur. A-461. Drlg. 1,900 ft.

Wichita County

A. E. Blair No. 1 Cody Est., sec. 311, Waggoner Col. Subd. R.U.R.

Melat & Graham No. 1 Munger, Blk. 3, K.W.V.F.V. Sur. Tstg. sdy. L. 3,774-3,870 ft.

G. H. Howell No. 1 Foster, sec. 1, H.T. &B. Sur., 900 ft. S.D. water

J. M. Morton No. 1 Housler, J. C. Pike, A-509 S.D. 3,142 ft.

Wilbarger County

F. A. Lain No. 1 Mrs. D. Coffee, sec 44, H.&T.C. Sur., Blk. 15. Drlg. 2,110 ft.

Young County

Alexander & Long No. 1 Goldston, S.P.R.R. Sur. A-263. Drlg. 1,150 ft.

S. Caprito No. 1 Mrs. N. Laquey, A. Irvin Sur. A-1,779. Drlg. 3,975 ft.

Art Cox No. 1 J. T. Rogers, J. Ray D-1,628. Drlg. 4,292 ft.

Hinson & Tidwell No. 1 Jeffery, T.E.&L. Sur., sec. 467. Drlg. 2,250 ft.

Pitzer-West No. 1 Dollins, T.E.&L. Sur., sec. 606. Drlg. 710 ft.

Yorktex Pet. Co. No. 1 F. G. Burnett, & W. Hills Sur. A-151. Drlg. 3,837 ft.

WEST TEXAS WILDCATS

Andrews County

Grisham Hunter Corp. No. 1 Ratliff & Bedford. S.D. 3,518 ft.

Wm. Hannigan No. 1 Logsden, 1,320 ft. from S and W, sec. 5, Blk. A-32. Drlg. 110 ft.

R. H. Henderson No. 1 J. E. Parker, sec. 25, P.S.L. Sur. A-43. S.D. 4,222 ft.

Borden County

Moore Bros. No. 1 Clayton-Johnson, sec. 20 Blk. 32, Twp. 4n, T.&P. Sur. Drlg. 2,967 ft.

Brewster County

F. C. Dodson No. 1 Texas American Synd. sec. 66, Blk. 10, G.H.&S.A. Sur. Pulling csg.

Toney Hess No. 1 Mary Deal, sec. 7, Blk. 1, G.T.R.R. Sur., 7 mi. NW of Marathon. S.D. 1,630 ft.

Cochran County

Cascade and Honolulu Oil Corp. No. 1 B B. Duggan, cen. Labour 13, League 55 Oldham County Sch. Ld. S.D. 5,038 ft.; pay 5,020 ft.; 5,000 ft. oil in hole; set csg.

Coke County

H. E. Ogden No. 1 E. C. Rawlins, sec. 391, Blk. 1-A, H.&T.C. Sur., 4 mi. N and 1 mi. W of Bronte. Loc.

Crane County

Gulf Oil Corp. No. 2 W. N. Waddell, sec. 18, Blk. B-21. Drlg. 6,400 ft.

Gulf Oil Corp. No. 2 McKnight, sec 9 Blk. B-21. T.D. 3,633 ft.; straightreaming.

Gulf Oil Corp. No. 2 Snodgrass, 440 ft. from N and W, sec. 1, Blk. B-25. Loc.

Loffland Bros. No. 2 Tubbs, sec. 9, B-37 S.D. 4,628 ft. for storage.

Moore Bros. No. 1 Barnsley, sec. 43. Blk 32, P.S.L. Sur. Drlg. 5,859 ft.

Dawson County

Roy Albaugh et al No. 1 J. Robinson. T.D 4,971 ft.; on increase in oil; S.D.O.; to shoot and acidize.

Ector County

Continental Oil Co. No. 1 Edwards, sec 32, Blk. 44, T.&P. Sur. T.D. 3,237 ft.; set csg.

Empire G. & F. Co. No. 1-C Cummins, sec 22, Blk. 45, Twp. 1n. T.&P. Sur. T.D. 3,920 ft.; to underream.

Sinclair Prairie No. 1-A Johnson, sec. 42, Blk. 42, Twp. 1s, T.&P. Sur. Drlg. 4,536 ft.

Stanolind O. & G. Co. No. 2-B Cowden, sec. 10, Blk. 43, Twp. 2s, T.&P. Sur. S.D. 4,015 ft.

York & Harper No. 1 York. Drlg. 4,046 ft.

Edwards County

M. I. Phillips & Miers No. 1 Turney, sec. 164, C.C.S.D.&R.G.N.G. Sur. S.D. 900 ft.

Plateau Oil Co. No. 1 Hatch, C SE SW¼ sec. 66, Blk. B, H.E.&W.T. Sur. S.D. 1,242 ft.

Fisher County

L. A. Daniels et al No. 1 J. J. Nickless. S.D. 1,175 ft.

Forest Dev. Co. No. 1 A. M. Dry, sec. 108, Blk. 2, H.&T.C. Sur. S.D. 4,354 ft.

Gaines County

Amerada Pet. Corp. No. 1-A Averitt, sec. 228, Blk. G, W.T.R.R. Sur. S.D. 3,280 ft.

Garza County

Gartex Oil Co. No. 2 Post Est., sec. 6, Blk. 5, K. Aycock Sur. Drlg. 2,463 ft.

Glasscock County

California-Honolulu Oil Corp. No. 1 Calverley, sec. 25, Blk. 35, Twp. 3s, T.&P. Sur. Drlg. 3,116 ft.

F. Dodson et al No. 1 Carter heirs, sec. 1, Blk. 33, Twp. 3s, T.&P. Sur. T.D. 2,669 ft.; P.B. 2,664 ft.; acidized 3,000 gals.; swbg. 45 bbls. oil day.

Hockley County

Texas Co. No. 1 B. Slaughter, Labour 83, League 38, Zavala Co. Sch. Lds. Fsg. 2,910 ft.

Hudspeth County

Hayman Krupp Oil & Land Co. No. 1 Thaxton, sec. 34, Blk. 74, Twp. 6, T.&P. Sur. S.D. 1,476 ft.

Jones County

Camp & Grady No. 1 Woodson. Drlg. 2,078 ft.

R. B. Ferris et al No. 1 Guitar, trustee, sec. 44, Blk. 15, T.&P. Sur., 1 mi. NE of Hawley. S.D. 1,992 ft.

P. E. Glenn No. 1 Carlton, Subd. 26, McMullen & McGloin Sur. Pits.

J. L. Reeves No. 1 Kelly, C. Martinez Sur., 1½ mi. N of Hawley. Drlg. 1,513 ft.

Kimble County

Wilcox O. & G. Co. No. 1 H. Spiller, sec. 15, Brooks & Burleson Sur., Abst. 89. Drlg. 2,670 ft.

Loving County

W. L. Pickens et al No. 1 Lewright, 660 ft N and E, sec. 1, Blk. C-37, P.S.L. Sur. Loc.

Pecos County

Aero O. & G. Co. No. 1 Bloydes, sec. 50, Blk. 10, H.&G.N. Sur. S.D. 1,400 ft.

Anderson Oil Co. No. 1 White & Baker, sec. 32, Blk. Z, T.C. Sur. Drlg. 1,258 ft.

C. A. Everitt No. 1 W. C. Tyrell, sec. 508, G. Montez & Duran Sur. Drlg. 826 ft.

A. H. Flaherty No. 1 Cunningham, 2,310 ft. from S and 330 ft. from W, sec. 25, Blk. 11, H.&G.N. Sur. Spudded and S.D.

Kirk et al No. 1 Potts, sec. 6, Blk. 9, H.& G.N. Sur. S.D. 675 ft.

E. R. Minshall, No. 1 Banker, sec. 25, Blk. 146, T.&St.L. Sur. Drlg. 2,672 ft.

Tex-Mex Oil Co. No. 1 McKee, Tr. 7, sec. 24, Blk. 9, H.&G.N. Sur. Set csg.; drlg. 2,727 ft.

S. Thompson No. 1 Elsinore Cattle Co., sec. 54, Blk. D, G.C.&S.F. Sur. Drlg. 3,220 ft.

Trans-Pecos Oil Co. No. 2 Caldwell, sec. 27, Blk. 50, T.&P. Sur. Drlg. 330 ft.

Presidio County

Lindeman Bros. Oil Corp. No. 1 J. R. Bledsoe & Badgley, sec. 15, Blk. 151, G.C.&S.F. R.R. Co. Sur., 2½ mil. NE of Presidio. T.D. 1,660 ft.; C.O. 20 ft. off bottom.

Schleicher County

Magnus Oil Co. No. 1 Judkins & Spencer, C SW¼ sec. 4, W. W. Russell, grantee. Elev. 2,209 ft.; S.G. 4,350 ft.; gas sd. 4,956-58 ft.; T.D. 6,527 ft.; P.B. to 5,779 ft.; S.D.; acidized.

Terrell County

Ohio Oil Co. No. 1 M. H. Goode, sec. 26, Blk. 161, G.C.&S.F. Sur. O.T.D. 6,120 ft.; preparing to deepen to Ordovician; R.U. rotary.

Terry County

J. A. Estes No. 1 F. B. Graham, sec. 28, Blk. T, O.&W.R.R. Sur. S.D. 70 ft.

Uscan Oil Co. No. 1 Brownfield, C NW¼ sec. 54, Blk. K, P.S.L. Sur. T.D. 3,650 ft.; R.U.S.T.

Tom Green County

Webb Bros. No. 1 J. F. Schrivener, Krending Sur. 1,663, 3 mi. N and E of Van Court. S.D. 70 ft.

Upton County

R. H. Henderson No. 1 Reese, sec. 16, Blk. 3½, C.C.S.D.&R.G.N.G. Sur. Skd. rig 25 ft. N; S.D. 165 ft.

Moore Bros. No. 1 Giddings, 660 ft. from S and 1,320 ft. from E, Sub. 25, Throckmorton Co. School Lands. Loc.

Ward County

P. Moran et al No. 1 Reynolds, sec. 12, Blk. 5, H.&T.C. Sur. S.D. 850 ft.

Phillips O. & G. Co. No. 1 Pure-Smith, sec. 26, Blk. 34, H.&T.C. Sur. Drlg. 2,544 ft.

C. H. Mahres No. 1 P. Wilson, Drlg. 2,326 ft.

Prince Bros. Drlg. Co. No. 1 Monroe, sec. 52, Blk. 34, H.&T.C. Sur. Fsg. 2,667 ft.

Texas Pacific C. & O. Co. et al No. 1 Buckner Orphans Home Lands, sec. 3, Blk. 32, H.&T.C. Sur. Drlg. 2,312 ft.

Winkler County

Emperor Oil Co. No. 1 Cross, sec. 4, Blk. B-11, P.S.L. Sur. T.D. 150 ft.; set csg.

Bert Fields et al No. 1 Walton, sec. 3, Blk C-23. T.D. 3,204 ft.; flowed 50 bbls. per hour.

Read & Duffey No. 1 Sealey, sec. 8, Blk. A, G.M.M.B.&A. Sur. S.D. 3,160 ft.

Texas Co. No. 1 Halley, sec. 7, Blk. B-11, P.S.L. Sur. T.D. 3,499 ft.; P.B. 3,195 ft.; testing.

Yoakum County

Texas Pacific Coal & Oil Co. No. 1 Bennett, 660 ft. N and 1,980 ft. W, sec. 678, John H. Gibson Sur. T.D. 270 ft.; drlg. plug.

Panhandle Completions

Carson County

Gulf Oil Corp. No. 9 Block, 3,000-3,121 feet, shot, 516 bbls. on pump. United Crude Oil Co. No. 6 Cooper, 3,040-3,140 feet, shot, 808 bbls. on pump.

Gray County

Parton and Holt No. 2-B Morse, dry and abandoned, 2,683 feet. Talco Oil Co. No. 5 Barrett, 3,200-70 feet, shot, 640 bbls. on pump. Danciger Oil & Refining Co. No. 11 Barrett, 3,247-3,300 feet, shot, 521 bbls. on pump. King Oil Co. No. 4 Simpson, 3,250-95 feet, shot, 528 bbls. on pump. Moran Drilling Co. No. 3 Holmes, 3,290-3,321 feet, 356 bbls. on gas lift. Danciger Oil & Refining Co. No. 3-A McLaughlin, 2,975-3,054 feet, 628 bbls. on pump. Empire Gas & Fuel Co. No. 9 Cunningham, 3,235-3,314 feet, shot, 532 bbls. on pump; No. 2 Worley, 2,983-3,095 feet, shot, 947 bbls. on pump. Skelly Oil Co. No. 78 Schafer, 3,210-95 feet, shot, 806 bbls. on pump. Texas Co. No. 18 Williams, 2,818-2,953 feet, 857 bbls. on pump.

Hutchinson County

McIlroy Oil Co. No. 1 Haile, 3,022-56 feet, shot, 643 bbls. on pump. Pharis Oil Co. No. 5 Smith, temporarily abandoned 2,735 feet. Skelly Oil Co. and others No. 3 Herring, 2,560-3,073 feet, plugged back to 2,885 feet, shot, 16,806,000 feet gas. Gulf Oil Corp. No. 62 Dial, 3,030-3,124 feet, shot, 344 bbls. on pump. Huber Petroleum Co. No. 2 State, 2,285-2,700 feet, plugged back to 2,660 feet, 5,900,000 feet gas. Lone Star Drilling Co. No. 1 Moore, 3,076-3,148 feet, shot, 621 bbls. on pump. Phillips Petroleum Co. No. 2 Whittenburg, 2,840-75 feet, shot, 57 bbls. oil and 10 bbls. water on pump. Texas Co. No. 8 Pond, 2,940-80 feet, shot, 432 bbls. on pump. Palmer and others No. 1 Linkey, 1,785-1,883 feet, 5,705,000 feet gas.

Rocky Mountain Fields

(Continued from Page 145)

Texas Co., sec. 9 Unit 1, C SE SW sec. 9-32n-5w. Loc.; (first report).

Judith Basin County

Fletcher E. Hunt No. 3, NW SE NE sec. 30-14n-15w. Drlg. 1,451 ft.

Liberty County

Western Natural Gas Co. No. 1 State, SE SE NW sec 16-37n-4e. Drlg. Colo. sh. 1,300 ft.

Musselshell County

Geo. Gregory et al No. 24-A Govt., NW SW NW sec. 25-11n-24e (Devil's Basin). Drlg. 140 ft.

Petroleum County

Homestake Oil Co. No. 24-A Govt., C NW sec. 10-15n-29e. Abd. 1,525 ft.; drld. into fault; skidding rig; new well R.U.

H. C. Rowland No. 1 Kalispel, NE NE SE sec. 35-14n-25e. Drlg. 405 ft.

Phillips County

Montana-Dakota Utilities Co. No. 1 Garrison, SW SE SE sec. 6-31n-34e (Bowdoin gas field). Drlg. 600 ft.; cmtd. 8¼-in. at 190 ft.

Pondera County

Clinch Pet., Ltd., No. 1 Holan, NW SW NW sec. 12-23e-6w. S.D. 2,200 ft.

Gordon Campbell No. 1 Hughes, NW NE NW sec. 12-30n-4w. S.D. 2,345 ft.

Jones-Chambers No. 1 Ericson, SW SE SW sec. 3-27-4w. Bldg. drk.

Kirk Oil Co. No. 1 Kellogg, SE NW NE sec. 31-28n-4w. R.O.G. (wildcat in Pendroy dist.; first report).

Montana Power Gas Co. No. 1 Berger, C NE sec. 31-31n-4e. Drlg. 875 ft.; Colo. 460 ft.; 12½-in. mudded 490 ft.

Sheridan County

Cheyenne O. & G. Co. No. 1 Olson, SE SE SE sec. 14-35n-53e. Drlg. 1,615 ft.

Teton County

R. C. Tarrant No. 1 Jones, C SE NW sec. 3-26n-6w. M.I.M. (first report).

Toole County

Two completions and four new locations were reported in the Kevin-Sunburst field. The New Era Fuel Co. No. 4 Halter, CEL NW NE section 21-35n-2w, made 2 bbls. per hour before acidizing at a total depth of 1,570 feet. Coolidge & Coolidge No. 1 Denzer, CEL SW NW section 11-35n-3w, made 20 bbls. the first 24 hours on the pump at a total depth of 1,844 feet after acidizing with 500 gallons. The contact was at 1,840 feet.

The No Jack Oil Co. No. 1 Lashbaugh, NE SW NW section 34-35n-2w, was abandoned after spudding to 20 feet.

Coolidge & Coolidge No. 3 Shaw, SE SE NE section 35-36-2w, reported a completion two weeks ago with 300 feet of oil in the hole from the Sunburst at 1,505-33 feet, was deepened to 1,878 feet in the Madison without improving and was plugged back and completed for 35 bbls.

The Clara Oil Co. No. 9 Waite, SE SE NE section 24-35n-2w, reported a completion at 1,490-1,550 feet, but not tested after acidizing, made 20 bbls. per day.

The Big West Oil Co. No. 3 Dalquist, SE NE NW section 21-35n-3w, which stopped flowing after making 300 bbls. a day and dropped down to 15 bbls., was deepened to 1,878 feet without showing an increase and was completed in the Ellis-Madison topped at 1,790 feet. It had some gas in the Sunburst at 1,535-50 feet.

Agen & Krause Co. No. 1 Krause, SE SE SE sec. 9-35n-3w. Loc. (first report).

Agen & Goeddertz No. 3 State, NE SW NE sec. 16-35n-3w. Drlg. 1,650 ft.

Dr. B. A. S. Aronow No. 3 Govt., NE SE NW sec. 21-35n-3w. Drlg. 1,085 ft.

Alexander-Sorrell No. 1 Strange, NE SE SE sec. 31-35n-3w. Drlg. 1,585 ft.

Cassidy et al No. 3 Carlson, CNL SW NE sec. 22-35n-3w. Drlg. 1,530 ft.; Sunburst 1,425-50 ft., dry.

Huso Bros. No. 2 Davis, C NE SE sec. 14-35n-3w. Cmtd. 8¼-in. at 1,000 ft. (first report).

Coolidge & Coolidge No. 1 Haskins, SW SE SW sec. 25-36n-2w. Rig (first report).

A. E. Crumley No. 11 Shaw, SE NW NE sec. 35-36n-2w. Rig (first report).

W. M. Fulton No. 1 Thompson, NW SW NE sec. 28-35n-3w. Loc. (first report).

Nepstad & Van der Pas No. 2 Thompson, C SE SW sec. 2-35n-3w. Drlg. 1,700 ft.

Pfabe & Engleking No. 1 Hurley, SW NE NW sec. 8-34n-2w. Spdg.

Frazier & Smith No. 1 Van Note, CWL SW NW sec. 30-35n-2w. Drlg. 1,110 ft.

Munger No. 1 Peterson, NW NW SW sec. 8-35n-2w. Drlg. 1,614 ft.

C. Leonard Smith No. 1 Graves-Hines, SW SE sec. 20-33n-2e. Cmtg. 6¼-in. at 785 ft. before drlg. into gas sd.

NEBRASKA

Dawes County

Stephens Oil Corp. No. 1 Palmer, C NW SW sec. 1-32n-50w. T.D. 1,794 ft.; prep. to run 8¼-in.

Red Willow County

C. W. Kelly et al No. 1 Bower, SE NW SE sec. 2-2n-29w. S.D. 1,450 ft.

Sioux County

J. M. Huber Corp. and United Producers, Inc., et al No. 1 Morgan, C SW SW sec. 32-35n-56w. Drlg. 1,800 ft.; 12½-in. at 1,500 ft.; top Niobrara 1,032 ft.; top Greenhorn L. 1,575 ft.

Franklin County

Wm. Steinlee No. 1, SE NE SE sec. 25-1n-15w. Spdg. 60 ft.

Grant County

Byrd-Frost, Inc., and Magnolia Pet. Co. No. 1, NE NE NW sec. 11-24n-38w. Drlg. 1,786 ft.; 13⅜-in. at 1,200 ft.

UTAH

Daggett County

Mountain Fuel Supply Co. No. 1 State, NW SE SW sec. 16-3n-24e. Drlg. 5,727 ft. in sh.

Emery County

California Co. No. 1 Palm Unit, C SW SW sec. 22-23s-11e. T.D. 2,285 ft.; circulating.

Grand County

Columbia Crude Corp. No. 1 Rath, NW SW sec. 12-25s-20e. S.D. 1,610 ft. to run 6¼-in.

Utah Southern Oil Co. No. 1 Hyde, SE NW NW sec. 33-22s-22e. Drlg. below 5,390 ft.

Utah County

Diamond Oil Co. No. 4 Govt., CSL SE NW sec. 16-8s-5e. T.D. 3,990 ft.; fsg. bit.

Oklahoma Fields

(Continued from Page 148)

section 7-17-7, location; Shibley and others No. 3 M. Campbell, C SW NW section 13-17-7, an old well deepened, cleaning out at 2,485 feet; L. B. Jackson No. 5 Nolan, SW NW NE section 2-17-8, rigging up machine; J. H. Wright Estate No. 4 Davis, NW NW SE section 23-17-10, rigging up machine; Clingensmith and others No. 2-A Gilcrease, C W half SE SE section 33-17-12, rigging up standard tools; Sinclair Prairie Oil Co. No. 12 Gilcrease, C E half SW SE section 33-17-12, spudded.

Okmulgee County

L. B. Jackson No. 1-A Smith, NW NW SW section 18-13-11, Okmulgee County, was dry and abandoned at 2,650 feet, total depth.

Logan and others No. 1-A Bennett, NE SW NW section 35-16-11, Okmulgee County, had a hole full of water and was dry and abandoned at 2,915 feet, total depth.

First reports were filed on the following Okmulgee County tests: L. D. Hawkins No. 3 Smith, NE NE SW section 19-13-13, location; A. J. Hazlett and others No. 6 M. Thompson, NW SW SW section 30-14-13, location; Lease Investment Co. No. 2 Fewell, SW SW SE section 33-15-11, location.

Tulsa County

Swift and others No. 3 Anthis, NW NW SW section 13-19-10, Tulsa County, had Bartlesville sand at 1,763-1,805 feet, total depth, produced 6,880,000 feet of gas and was completed.

Swift and others No. 2 Tidal, C E half NE SE section 14-19-10, Tulsa County, was rigging up. Sinclair Prairie Oil Co. No. 16 Thomas, SE NE NW SE section 24-20-12, was rigging up machine.

Coal County

M. C. Mitchell No. 1 Quiett, NE NW SW section 35-1n-8e, Coal County, was dry and abandoned at 1,900 feet, total depth.

Carter County

Samedan Oil Co. No. 13 Higgins, SW NW NE section 7-2s-2w, Carter County, pumped 112 bbls. of oil in 24 hours and was completed at 2,340 feet, total depth. It had numerous oil and gas sands and limes, with best pay zones from 1,576 to 1,700 feet. McMinn and others No. 1 H. P. Tussy, NE SE NW section 6-1s-3w, was bottomed at 3,402 feet; plugged back to 3,258 feet; pumped 12 bbls. of oil and 60 bbls. of water, completed.

Two new Carter County tests were reported: Samedan Oil Co. No. 14 Higgins, NW SW NE section 7-2s-2w, rigging up; Sinclair Prairie Oil Co. No. 8 Apple-Franklin, NW SW NW section 9-4s-3w, rigging up machine.

Marshall County

Oller & Rodgers No. 1 Sullivan, NE SE SW section 19-5s-6, Marshall County, was abandoned at 120 feet, total depth. Levelle Coal Co. No. 1 Brent, C SE section 1-8s-5e, had a hole full of water and was abandoned at 575 feet.

Magnolia Petroleum Co. No. 1 R. A. Gardner, NE NE NW section 3-6s-6e, a new Marshall County operation, was building derrick.

Noble County

Tide Water Oil Co. No. 1-A Hackett, NE NW SE section 21-23-2w, was building rig for a new Noble County test.

Garvin County

Cox & Hamon No. 4 Davis, NE SW SE section 32-1n-3w, a new test in the Tussy area, Garvin County, had dug pits.

Southwestern Oklahoma

Ohio Oil Co. No. 10 Wade, NW NE SW section 2-5-9w, in the Cement pool, Caddo County, produced 44,000,000 feet of gas, and was completed after plugging back from 6,854 feet, total depth, to 6,575 feet. It was a direct offset to the deep sand discovery well in the pool, but formations did not correlate with the discovery.

In Comanche County, Edwards & Kadane No. 1-A Culberson, NW NE NE section 32-2n-10w, was dry and abandoned at 902 feet, total depth.

Bob Burns No. 1 Noskey, NW cor. section 1-6-17w, Kiowa County, had a hole full of water at 458-505 feet, total depth, and was abandoned. R. O. Houlbelt No. 1 Pfenning, SE NW SE section 35-7-17w, Kiowa County, was dry and abandoned at 478 feet, total depth, in lime. Burns & Moore No. 1 J. R. Pfenning, SE cor. section 35-7-17w, Kiowa County, was dry and abandoned at 400 feet, total depth.

In Jackson County, C. P. Burnham No. 1 Oliver, NW NW SE section 26-1n-20w, wildcat, topped Granite Wash at 1,912 feet; lime, 1,980 feet; and was dry and abandoned at 2,368 feet, total depth.

Hylo Oil Co. No. 4 Malicky, SW SW NW NE section 31-1n-8w, Stephens County, had water at 1,943-46 feet, total depth, and was dry and abandoned.

Two new tests were reported in Stephens County: The Texas Co. No. 4 Bohanan, SW NE NW NW section 15-3s-5w, was a location. Magnolia Petroleum Co. No. 2 Warrell, NE NW NW section 19-1s-8w, an old well being deepened, was drilling at 1,815 feet in shale.

PERSONAL

J. C. RECTOR, until recently superintendent of gas operations, southern division, of the Union Oil Company, has been appointed general superintendent of gas operations with jurisdiction over the San Joaquin, Coastal and Southern divisions. Mr. Rector entered the employ of the Union Oil Company as an electrician at Orcutt, Calif., in October, 1907, but resigned in 1911. He accepted a position with the Pinal Dome Oil Company in 1912 and when the Union Oil Company acquired the Pinal Dome's holdings in 1917 he found himself a member of the operating staff.

O. E. McCLATCHEY, purchasing agent, Barnsdall Oil Company, will discuss "The Relationship Between Company Engineers and Purchasing Agents" at a joint meeting of the Engineers Club of Tulsa and the Tulsa Purchasing Agents Association Friday night.

LEO HERRICK, formerly manager of the Fort Smith, Ark., branch of the Crane Company, has been appointed manager of the St. Louis, Mo., branch.

DR. G. S. HUME, of the Geological Survey of Canada at Ottawa, recently inspected drilling operations of Roxana Petroleum, Ltd., on the Kootenay dome northwest of Calgary, Alberta.

P. W. ENSIGN, of Huntington, Calif., president and chief engineer of the Ensign Carburetor Company, left recently for Chicago, Ill., to visit the company's branch at that point. Mr. Ensign's return itinerary includes a trip through the Mid-Continent and Gulf Coast districts.

D. L. PICKARD and S. H. SAYRES, superintendents of drilling and production, respectively, for the Anglo-Iranian Oil Company in Iran, have been in Tulsa studying drilling and production methods in the Mid-Continent area. They were to go from Tulsa to Houston, Tex., and later attend the annual American Petroleum Institute meeting in Chicago.

HOWARD BURCHARD of New Deal Specialty Company, Inc., of Okmulgee, Okla., is spending his vacation in Texas.

PERRY L. WITHERS of Yorkton, Saskatchewan, was in Conrad, Mont., recently attending the funeral of his father, the late P. E. WITHERS.

J. G. MATHEWS has joined the sales staff of the Braden Steel Corporation, Tulsa. Recently he had been employed in the refinery engineering department of Phillips Petroleum Company.

T. R. TAYLOR, who was manager of the St. Louis, Mo., branch of the Crane Company, has been appointed division manager of the southwestern territory, with headquarters in St. Louis.

H. E. GROSS, petroleum engineer in the Exploitation Department for Shell Petroleum Company in Tulsa for the past three years, resigned October 1 to accept a position on the faculty of the School of Petroleum Engineering, University of Oklahoma at Norman. Mr. Gross has been engaged in the oil industry since 1931. A native of Missouri, he pursued his undergraduate studies at Missouri School of Mines and Metallurgy, Rolla, Mo. He was granted a B.S. degree in 1928. He studied engineering at the University of Illinois and in 1933 received his Master's degree there. In 1934 he received his Professional degree from Missouri School of Mines.

OTTO DONNELL, Findlay, Ohio, president of Ohio Oil Company, was in Denver, Colo., on business last week.

J. B. CRAPO, geologist, called upon Denver, Colo., friends on his way from the Texas fields to his home at Vernal, Utah.

JOHN E. MABEE, independent producer and drilling contractor, Tulsa, and HARRY BLACKSTOCK, Oklahoma City, Okla., operator, have returned from New York.

R. L. CONWAY, JR., safety director for Phoenix Engineering Company and United Gas System, has been transferred from the Rodessa area to the Texas division.

R. C. SHIBE, of the Wilshire Oil Company, discussed current tax problems confronting the oil industry at the recent monthly meeting of the Petroleum Accountants Society held in Los Angeles, Calif.

O. H. MARYOTT, of the Maryott Drilling Company of Pagosa Springs, Colo., was in Denver, Colo., on business this week. His company has contracted to drill five wells in Archuleta County.

ROGER B. OWINGS, Fort Worth, Tex., royalty and lease dealer and manager of the Deltex Royalty Company, accompanied by MRS. OWINGS, visited in Philadelphia, Pa., New York and Baltimore, Md., last week.

LESTER CALLAHAN and J. W. WOOD of Wood-Callahan Oil Company have returned to Los Angeles, Calif., from a visit to Wyoming, where their initial project is just about to spud in on the Hidden dome structure in section 25-28-91 in Washakie County.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Fire causes $100,000 damage to the Eclipse Oil Works plant in Franklin, Pa.

Capt. N. V. V. Franchot, prominent Eastern and Oklahoma oil operator, is nominated for mayor of Olean, N. Y., on an independent ticket. He was "drafted" by 600 citizens.

The Regal Oil & Gas Company buys Charles Page's Taneha, Okla., oil properties for a price variously estimated from $800,000 to $1,000,000, and plans to build a refinery at Sand Springs, Okla. The company is made up of rich easterners.

20 YEARS AGO

The late T. C. McManus, Titusville, Pa., and Tulsa, oil man, leaves his estate of $25,000 to the Boys Home in Cincinnati, Ohio, in memory of his mother.

Josiah G. Winger, pioneer driller and oil producer, dies at Grand Valley, Pa., aged 71 years. He entered the oil business in 1860.

Frank Duke, sales manager for Standard Oil Company, dies in Long Island City, N. Y. He was 31 years with the Standard organization, starting when he was 15.

10 YEARS AGO

A 6,000-barrel well at Pine Island, Caddo Parish, Louisiana; a 3,000- to 5,000-barrel well in the Sunburst, Montana, field, flowing wild, and the deepest producing well ever drilled in the Gulf Coast, completed in Cameron Parish, Louisiana, for 750 barrels a day at 6,111 feet, are feature wells of the week.

Howard R. Merritt, prominent oil country banker, dies at Oil City, Pa., at the age of 59 years.

H. L. SCOTT, geologist for Manning & Martin, Inc., returned to Denver, Colo., headquarters this week after a business trip to the Mid-Continent fields.

HARLEY STEVENS and MRS. STEVENS sailed from New York Saturday bound for San Francisco, Calif. Mr. Stevens is a member of the legal staff of the Standard Oil Company of California.

JOHN MACFADYEN, vice president of the Ohio Oil Company, in charge of Rocky Mountain operations, was in Denver, Colo., from headquarters at Casper, Wyo., this week on company business.

J. H. DASTEEL, until a short time ago general manager of Union Oil Company service stations, has reentered the legal profession and is now associated with JOSEPH MUSGROVE in Los Angeles, Calif.

H. E. MARSH, head of the land department in the Fort Worth, Tex., district for Amerada Petroleum Corporation, accompanied by his bride, the former MRS. MARY LEE CARROLL, visited in New York last week.

R. D. REED, president of the American Association of Petroleum Geologists, was guest speaker at the first meeting of the season of the Rocky Mountain Association of Petroleum Geologists at Denver, Colo., on October 5.

F. E. WHITESELL, manager of automotive lubrication sales of Socony-Vacuum Oil Company, and C. B. WHITE of the same department recently completed a tour of the Pacific Coast accompanied by H. W. TAYLOR, manager of the lubrication department of General Petroleum Corporation.

PARAGRAPHS

R. C. BARKER, drilling contractor of Denver, Colo., recently made an airplane trip to Calgary, Alberta, to inspect the Turner Valley field.

C. D. MARTIN of Tulsa visited the Turner Valley field recently, making the trip from Tulsa to Calgary, Alberta, and return by airplane.

CARL J. O'HORNETT, independent oil operator, returned to Tulsa recently from a five weeks' fishing trip in Minnesota, and then went right on down to Muskogee, Okla., last week to attend the monthly Indian lease sale.

DR. RALPH D. REED, president of the American Association of Petroleum Geologists, spoke before the Rocky Mountain Geologists Association on the evening of October 5 in Denver, Colo. Doctor Reed is making a tour of the oil country as far east as the Mid-Continent and will be in Tulsa October 12.

A. L. CASHMAN, superintendent of the land department; J. S. FREEMAN, production superintendent, and O. M. EVANS, efficiency engineer, of Skelly Oil Company; HERBERT W. KLEIN, production superintendent, and GEORGE S. BAYS, production superintendent, of Stanolind Oil & Gas Company, and CHARLES MEDLEY, Tulsa representative of the American Manufacturing Company of Fort Worth, Tex., have returned from a big-game hunting trip in Wyoming.

J. B. SAUNDERS, sales manager for Imperial Refineries, St. Louis, Mo., made a business trip to Tulsa this week.

O. H. RICHARDSON, of the land department, Shell Petroleum Corporation, has been transferred from the company's Houston, Tex., office to Tulsa.

SEQUOYAH BROWN, formerly business manager of the University of Texas, has joined the personnel department of the Carter Oil Company in Tulsa.

W. R. LUND has been made assistant to R. C. JOPLING, director of public relations of the Phillips Petroleum Company. He was formerly in the company's marketing department.

D. H. FOSTER, lubrication engineer for Mid-Continent Petroleum Corporation, has been advanced to special sales representative of the company in Kansas, Oklahoma, Missouri and Arkansas succeeding SAM VALENTINE, resigned.

TOM J. TURNER, of the engineering department of the Sinclair Prairie Oil Company in Tulsa, has been transferred to the production department in the Rocky Mountain division, and will be stationed in Montana. He is succeeded in Tulsa by GORDON MOORE.

G. V. D. MARX, chairman of A.P.I. topical committee on production technology, has appointed K. B. BARNES (Gulf Oil Corporation, Gypsy division, Tulsa) as chairman of the Mid-Continent district subcommittee, succeeding H. H. POWER, who is joining the faculty of the University of Texas at Austin.

JOHN D. ROCKEFELLER, SR., left Lakewood, N. J., on October 7 for his Ormond Beach, Fla., winter home.

W. C. FISHER, president of Model Oils, Ltd., has returned to Calgary, Alberta, from a motor trip through Saskatchewan.

C. B. JOHNSON, general manager, McKissick Products Company of Tulsa, is spending several weeks on a field trip to New Mexico and Texas.

C. H. RANKIN has been promoted from production foreman for Continental Oil Company in the Jesse area of Oklahoma to the position of district superintendent of the Shiprock district in New Mexico. He takes the place left vacant by the death of E. M. RAMSEY. Mr. Rankin was employed for seven years in the geological department of the Rocky Mountain division prior to being transferred to the production department the first of this year. J. M. JONES, who has been production foreman in the Borger district of Texas, has been transferred to the same position in the Jesse area.

WAITE PHILLIPS, oil man and banker of Tulsa, donated $100,000 to St. John's Hospital in that city recently. The money will be used in erecting and equipping a building on the hospital property for a cancer clinic, and providing a ward for the treatment of the sick poor. Mr. Phillips' gift is a memorial to his twin brother, WIATE PHILLIPS, who died at the age of 19 years. This is only one of a number of large gifts Mr. Phillips has made to Tulsa institutions. Tulsa University and the organized charities of the city have been beneficiaries as well as St. John's Hospital. Mr. Phillips started in the oil business when a young man, and from the beginning of his business career was highly successful. He is a large real estate owner in Tulsa and chairman of the board of directors of the First National Bank & Trust Company of Tulsa.

Always in the Oil Fields

William H. Eastham, recently made assistant superintendent of production, in charge of field operations for the Sunray Oil Company, worked up from the ranks and he says he never has done a day's work outside the oil fields. Born in Jamestown, Ky., 38 years ago, he moved with his parents to a community near Wichita, Kans., when a child and he passed his boyhood in southern Kansas. When the Eldorado and Augusta pools were opened he was one of the first persons on the scene. A youth just out of high school, he was looking for a job. He caught the oil fever and obtained work as a roustabout, starting at Eldorado in 1911. He has been engaged in some phase of oil-field work ever since then.

WILLIAM H. EASTHAM

As part of his oil-field background Mr. Eastham had 10 years' experience on drilling wells, both as cable-tool driller and with rotary equipment. He worked for four years at Shidler, four years at Sasakwa, and for shorter periods at Seminole, Okla.; Breckenridge, Tex.; Winfield, Kans., and in California. At various times he drilled wells for the old Marland Oil Company, Sinclair Oil Company, and White Eagle Refining Company. Eight years ago he entered the service of the Sunray company as a driller at Sasakwa. He advanced successively to tool pusher, field superintendent and now assistant superintendent of production. He is married, has two sons and resides in Tulsa. Mr. Eastham is a Mason and a member of the Consistory.

GEORGE A. HILL, JR., president of the Houston Oil Company, of Houston, Tex., was a business visitor recently in New York City.

W. K. WARREN and SAM HULSE, of Warren Petroleum Company, have returned to Tulsa from a business trip to Texas and Louisiana points.

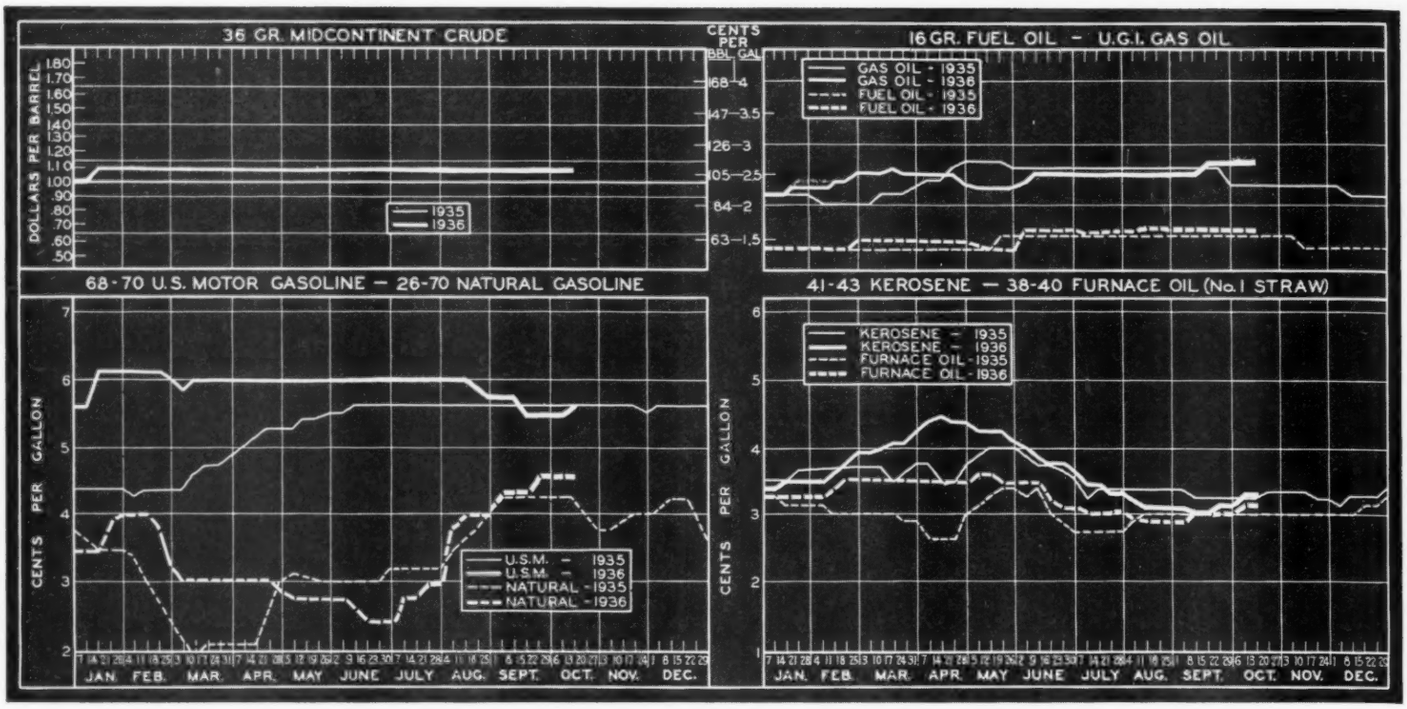
D. C. WILLIAMS, of Ponca City, Okla., president of the Northern Oklahoma Gas Company, who underwent a serious operation recently, is convalescing.

GEORGE R. ELLIOTT, formerly petroleum engineer in the Turner Valley field of Alberta, Canada, has joined the Phillips Petroleum Company at Shreveport, La.

A. J. GALLOWAY, vice president of Shell Petroleum Corporation, recently returned to Tulsa. During the last three months he has been at the St. Louis, Mo., offices of the company and on vacation.

M. E. MONTROSE, vice president and general manager of Lane-Wells Company, was announced as the speaker at the regular meeting of the Kansas Geological Society at Wichita Wednesday night. His subject was "Application of Gun Perforator," and his talk was illustrated with pictures.

RUSH GREENSLADE, vice president and general manager of Gulf Oil Corporation (Gypsy division), and MRS. GREENSLADE, sailed last Friday from New York for a six weeks' vacation in Central and South America. They will visit the Panama Canal zone and sail down the Pacific Coast, visiting Peruvian and Chilian points, after which they will fly to Buenos Aires, Argentina. On the return trip they will stop off at various Caribbean points.


36 GR. MIDCONTINENT CRUDE
DOLLARS PER BARREL
1935
1936
CENTS PER BBL GAL
16 GR. FUEL OIL - U.G.I. GAS OIL
GAS OIL - 1935
GAS OIL - 1936
FUEL OIL - 1935
FUEL OIL - 1936
68-70 U.S. MOTOR GASOLINE — 26-70 NATURAL GASOLINE
CENTS PER GALLON
U.S.M. - 1935
U.S.M. - 1936
NATURAL - 1935
NATURAL - 1936
41-43 KEROSENE — 38-40 FURNACE OIL (No. 1 STRAW)
KEROSENE - 1935
KEROSENE - 1936
FURNACE OIL - 1935
FURNACE OIL - 1936
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

Representative Mid-Continent Quotations on Crude Oil and Refined Products. Basis Oklahoma (Group 3)

Heating Oils Strong and Motor Fuel Looking Better in Group 3 Area

By T. F. SMILEY

Rising strength of the heating oils continued this week to give them a front-line position among refined products in the Group 3 market. Natural gasoline, riding spiritedly along at its three-year peak, gave no sign of when it might be expected to slacken its gait. The week saw a definite turn in the motor fuels, which not only were in a healthier state marketwise but were moving to slightly higher price levels. The neutrals, which recently suffered a crack-up, were apparently on the way to recovery.

The gasoline market seems to have shaken off the nervousness which started tankcar prices tumbling in mid-August, at the height of the touring season. The regular grade lost a full half-cent in the decline, which was not halted until the middle of September, some Mid-Continent refiners closing their plants in the meantime in preference to unprofitable operation. The improved tone of the market in the last two weeks is attributed in great measure to shrinkage of top-heavy inventories and to sharp cutting of runs to stills in the Central West area.

SURPLUS STOCKS CUT DOWN

As a result of failure to restrict operations to consumer demand overlarge gasoline stocks accumulated at various plants, and these were on hand as the end of the vacation season approached. Simultaneous efforts to get rid of them before cool fall weather set in disturbed the market. It is believed most of these inventories have now been reduced to the dimensions of good-sized working stocks.

Heavy rains throughout much of the territory served by Group 3 refiners have had little observable effect on gasoline consumption. Thousands of tourists are still on the road. In this connection the rapidly increasing introduction of the trailer is regarded as a factor of consequence since this form of traveling residence can remain on the highways after the family car has completed its summer vacation trip of a few weeks and has been returned to the garage.

Tightness of the furnace oils increased in the last week. In northern regions where this material is in general use for heating purposes the home owner usually has a storage tank of 200 to 250 gallons capacity. He makes his late spring purchases of such size that his tank will be virtually empty through the warm summer months. Now these tanks are being refilled, and in the aggregate this demand represents a substantial volume. As the jobber draws on his storage to supply this domestic demand he is likely to buy in the spot market to replace what he has withdrawn in order to keep his stock at a high mark until the heavy winter consumption develops. This kind of trade, added to the growing needs of jobbers who do not have large storage and must get their supplies in the open market as they are required, is producing vigor in the burning oils. So scarce were the No. 2 and No. 3 grades that some buyers declared they practically were unable to get them at all. Prime white was in more urgent call than last week, and kerosene was active.

NATURAL GASOLINE

Relatively little natural gasoline was moving in the spot market, most manufacturers being concerned chiefly with meeting the requests of refiners for shipments on contracts. Prices were unchanged, and manufacturers seemed satisfied to let them stay at the present level notwithstanding the insistent character of refinery demand.

Neutral-oil prices, which underwent deep slashing two weeks ago, had regained a fair degree of steadiness. The price-cuts, understood to have been made to meet underselling, apparently acted as a corrective, as no further reports of concessions to get business were heard.

Although the heavy consuming season for tractor fuels is now over, a demand for them continues, and it is expected to be prolonged till the close of the late plowing next month. Wax was strong at unchanged quotations.

Refined Oil Market Barometer

Curtailed refinery operations and reduction of topheavy inventories in the Central West have improved the position of gasoline in the Mississippi Valley, but unsteadiness persists on the Pacific and Atlantic coasts. Fuel oils have entered their season of active demand, with some grades scarce. Price-cutting, which was undermining the Mid-Continent neutral market, is believed checked. Naturals remain tight.

MID-CONTINENT. Gasoline steadier. Heating oils vigorous. Naturals holding gains.

EAST COAST. Fuel oils up. Gasoline unsettled, with retail market soft.

GULF COAST. Gasoline, fuel oils steady.

PENNSYLVANIA. Neutrals strong. Kerosene, fuel oil firm. Cylinder stocks dull.

CALIFORNIA. Gasoline less firm, with retail market weak.

CHICAGO. Gasoline tankcar prices steady, but retail spotty. Fuel oils firm.

Fuel Oils Move Higher on East Coast

But Tankcar Gasoline Is Spotty

By H. STANLEY NORMAN

NEW YORK, Oct. 13.—Fuel oils of all grades continued their movement into higher price ranges along the eastern seaboard last week, but the tankcar gasoline market in New York territory was a spotty picture.

Industrial fuel and ships' bunker grades seemed well maintained at high prices all along the Atlantic Coast. Two cargoes of heavy oil were contracted on the Gulf Coast last week at 95 cents per barrel giving firm indication that buyers will pay higher prices when their supplies require replenishment.

Weakness in the Pennsylvania grade bright stocks continued to be felt with some suppliers yielding to slackened purchases by lowering prices a quarter to a half cent per gallon. This movement seemed checked late last week. However, the neutrals offered sharp contrast and pushed into higher ground for the fall blending business. The 600 steam refined material is offered at some points a half cent per gallon under previous quotations while others dropped down to the middle position between the two price extremes previously prevailing. Curtailment of demand for the 600 steam refined material by processors was apparent as they turned to higher pourpoint and lower cold test products for the winter trade. The inter-refinery buying of bright stocks continues at a satisfactory rate, but is insufficient to absorb all current production. That the price concession bid for business met some response is evidenced by reports of a mild spurt in actual sales.

Most of the inter-refinery buying is prompted by export business, but specifications call for further processing in most instances to obtain desired color and pour test.

Significance of the export lubricating market is displayed by the most recent report from the department of commerce. The bureau's division of metals and minerals, reported lubricating oil exports for August exceeded those of July by approximately 25,000 bbls. and those of August, 1935, by about 106,500 bbls.

Virtually all suppliers of neutral oils are asking the top price in present quotation ranges. Symbolic of the strength in this particular material is the fact that sales are increasing even at the higher prices. Stocks are in favorable condition to warrant further advances as the fall season progresses and under normal demand circumstances, according to those watching this particular field of the trade.

Light fuel oils which felt the first pressure of winter demand during the last week of September continue to move forward and prices on the No. 2 grade in New York territory seemed firmly established at 4¼ to 4⅜ cents per gallon in tankcar lots. No. 1 fuel is quoted by a majority of refiners at 4½ to 4⅝ cents while the No. 4 fuel is enjoying comparable strength at 4 cents per gallon. There are a few scattered reports of sales below the majority quotations, but they are gradually diminishing as jobbers are forced into the market for additional supplies. A majority of the large dealers have made their commitments for their anticipated winter requirements, but there remains considerable business hanging over the market for domestic heating material. Ability of some of the smaller dealers to obtain commitments from refiners for over the winter delivery at prices slightly under general quotations prevailing during the summer has placed a definite limitation on top figures in individual contracts. Protection of established dealers forced many of the larger refiners to reduce the limits of their season contracts.

By reducing the margin between the quotations current during the latter part of summer and the contract maximum guaranteed consumers for over-the-winter delivery, much of the "cut throat" competition was met. Opportunities for short deliveries, tax evasion, stealing from barges and manipulation of cargoes by use of false bottomed boats are factors entering competition in New York territory. Practices of some unscrupulous individuals in the past have made competition in the New York fuel market far more complicated than simple service, quality, supply and demand.

Along with strength in lighter fuels, kerosene has maintained its improved position and seems to be creeping higher from day to day. The price ranges of 4¼ to 4⅝ cents per gallon in tankcars and 4⅜ to 4½ cents in barges are well maintained in New York territory. The call for kerosene in the New England district remains brisk and parts of upper New York state are consuming large quantities. The strength displayed by kerosene in eastern seaboard territory is also reflected in the Gulf Coast section with prices ranging from 3⅞ cents for 41-43 prime white material upward. The export kerosene market is also strong at 3⅝ cents up to 4½ cents, despite the fact that no cargo sales were reported last week.

Neutral oil for export trade seems to be approximately a half cent above previous levels. The 150-3 color material is now generally quoted at 24 cents with 200-3 color at 27½ cents. Some suppliers with their stocks in good position have displayed no particular anxiety to do business at present quotations. Shipments to regular customers in Europe and other foreign countries are improving. Greater consumption abroad may be experienced, trade observers hold, if purposes of lowered duties are attained.

Gasoline is probably the weakest link in the petroleum market in the eastern territory, but this is not particularly applicable to the tankcar trade outside the New York harbor territory. Prices of 6½ cents are more frequent for 65 octane, although probably a bulk of the trade maintains quotations at 6¾ cents for above 65 octane. Some scattered business is being reported currently at 6¼ cents for 60-65 octane gasoline but it consists largely of dealers obtaining material for a quarter of a cent below the published market.

REBATES SPREAD

Encroachment of secret rebates and discounts is said to be spreading from New York to territory south and north. However, the tankcar market at Philadelphia is reasonably firm. The disturbances are contributing to unsettlement in the retail field, although this particular phase of the market in New York is virtually unchanged from 6 gallons for 98 cents to $1. The prices pertain to "house brand" gasoline and extend throughout the metropolitan district and into suburban territory around New York. A few stations in favorable locations are selling at 15 cents per gallon and report doing satisfactory business.

The wax market in the eastern and Gulf Coast districts seems to be gaining strength on a modest basis. More and more suppliers are breaking away from the minimum quotations and are doing a satisfactory volume of business at figures between the minimum and maximum. Some are even quoting the maximums and express themselves as satisfied with response from consumers. Several companies are asking 2.55 cents per pound for 124-126 white crude scale material, but considerable is selling at 2.45 cents. The minimum is up a half cent from previous business, however, and indicates the upward trend.

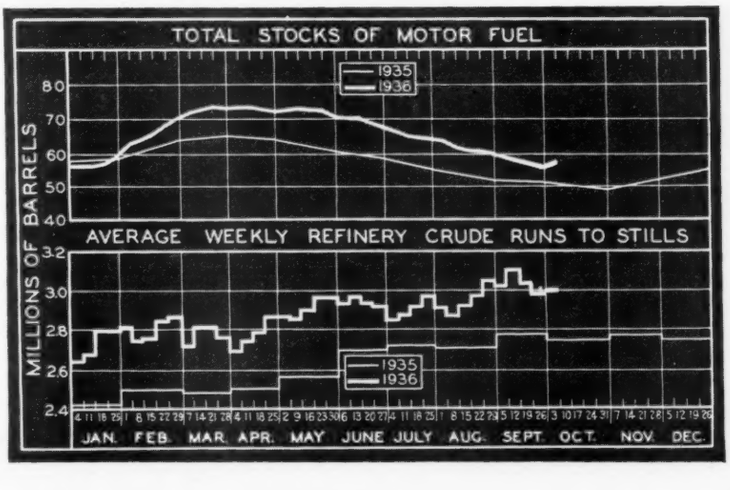
A. P. I. Weekly Refinery Statistics

Week Ending October 3, 1936

(Figures for week ending October 10 not available)

	Capacity reporting (per cent)	Daily crude runs (bbls.)	Total gasoline stocks	Gas oil and fuel oil stocks
East Coast	100.0	513,000	16,130,000	12,463,000
Applachian	94.8	103,000	2,041,000	627,000
Indiana, Illinois, Kentucky	96.1	434,000	8,184,000	6,445,000
Oklahoma, Kansas, Missouri	84.8	278,000	5,542,000	3,541,000
Inland Texas	48.5	117,000	1,384,000	1,718,000
Texas Gulf	97.0	622,000	6,924,000	8,646,000
Louisiana Gulf	96.4	115,000	1,555,000	2,369,000
North Louisiana and Arkansas	90 0	43,000	277,000	359,000
Rocky Mountains	61.9	45,000	759,000	772,000
California	92.6	515,000	11,736,000	73,462,000
Total reported	89.8	2,785,000	54,532,000	110,402,000
Estimated unreported	.....	215,000	3,078,000	2,310,000
*Estimated total	.....	3,000,000	57,610,000	112,712,000
*Estimated total previous week	.....	2,990,000	56,472,000	112,504,000
†October 31, 1935	.....	2,746,000	49,798,000	109,952,000

*Bureau of Mines basis, currently estimated. †Monthly report, U. S. Bureau of Mines.



RETAIL OIL MARKETS

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of October 13, 1936

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and city taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Discounts

Under the standard form of commercial consumer contract which went into effect March 1, 1934, save in California, Oregon, Washington, Arizona and Nevada, a discount of 1 cent a gallon off tank-wagon or 3 cents a gallon off retail prices is permitted for purchases between 4,000 and 10,000 gallons per month or 4 cents a gallon off retail prices for purchases in lots of more than 10,000 gallons a month. The minimum delivery is 25 gallons.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Chicago	15.4	17.4	4.0	9.2
Decatur, Ill.	15.4	(†)	4.0	9.2
E. St. Louis	15.1	(†)	4.0	8.9
Joliet	14.5	(†)	4.0	9.2
Peoria	15.4	(†)	4.0	9.2
Quincy	15.2	(†)	4.0	9.0
Davenport, Ia.	15.4	(†)	4.0	9.2
Des Moines	15.2	(†)	4.0	9.0
Mason City	15.6	(†)	4.0	9.4
Sioux City	15.4	(†)	4.0	9.2
Duluth, Minn.	16.2	(†)	4.0	10.0
Mankato	15.8	(†)	4.0	9.6
Minneapolis	15.8	(†)	4.0	9.6
La Crosse, Wis.	16.8	(†)	5.0	9.6
Green Bay	17.1	(†)	5.0	9.9
Milwaukee	16.7	(†)	5.0	9.5
Madison	16.8	(†)	5.0	9.6
Detroit, Mich.	15.0	(†)	4.0	8.8
Grand Rapids	15.4	(†)	4.0	9.3
Saginaw	15.6	(†)	4.0	10.1
Evansville, Ind.	17.1	(†)	5.0	9.7
Indianapolis	17.3	(†)	5.0	9.0
South Bend	17.5	(†)	5.0	9.0
Fargo, N. Dak.	16.8	(†)	4.0	10.6
Huron, S. Dak.	17.2	(†)	5.0	10.1
Sioux Falls	16.8	(†)	5.0	9.6
Kans. City, Mo.*	24.8	(†)	4.0	8.0
Springfield	14.5	(†)	4.0	8.3
St. Louis	15.1	(†)	4.0	8.9
St. Joseph*	14.8	(†)	4.0	8.6
Wichita, Kans.	14.3	(†)	4.0	8.0
Bartlesville, Ok.	15.0	12.0	5.0	8.5

*State tax 2 cents, 1-cent city tax and 1-cent federal tax.

†Standard Oil Co. (Indiana) has leased all service stations in these cities.

Discounts to dealers except in Iowa 2¼ cents on premium and regular and 2½ cents on third grade off service station prices; discounts to dealers in metropolitan Chicago one-half cent larger than rest of Standard of Indiana territory, namely 4 cents and 3 cents on respective grades. Dealers in Iowa sold at posted "Dealer Prices."

Stanolex Fuel Oil in Chicago

Effective October 5, 1936, f.o.b. Chicago tank-wagon prices: Range oil, 1-99 gallons, 8.75 cents; 100-119 gallons, 7.75 cents; 150 gallons and over, 7.25 cents. Stanolex No. 1, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.75 cents; 150 gallons and over, 6.75 cents. Stanolex furnace oil, 1-149 gallons, 7.75 cents; 150 gallons and over, 6.75 cents. Stanolex A, 1-399 gallons, 6 cents; 400 gallons and over, 5 cents. Stanolex B, 1-799 gallons, 5.5 cents; 800 gallons and over, 4.5 cents.

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Atlanta, Ga.	20.5	22.5	7.0	*13.0
Augusta,	19.5	21.0	7.0	*13.5
Macon	20.0	22.0	7.0	*14.0
Savannah	18.5	20.5	7.0	*12.5
Birm'ham, Ala.	21.0	23.0	8.0	12.0
Mobile	20.0	21.0	9.0	11.0
Montgomery	20.5	21.0	9.0	14.0
Jackson, Miss.	20.0	22.0	7.0	*12.5
Vicksburg	19.5	....	7.0	12.5
Jacksonville, Fla.	18.0	20.0	8.0	11.5
Miami	19.5	21.5	8.0	12.5
Pensacola	21.5	23.5	9.0	12.0
Tampa	18.0	20.0	8.0	11.5
Lexington, Ky.	18.0	20.0	6.0	11.0
Covington	17.5	19.5	6.0	10.5
Louisville	18.0	20.0	6.0	10.0
Paducah	16.75	17.5	6.0	8.0

*Includes 1 cent state tax. Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax; and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon. Pensacola, Fla., has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Denver, Colo.	19.0	21.0	5.0	11.0
Grand Junction	21.5	23.5	5.0	15.0
Pueblo	19.0	21.0	5.0	10.0
Casper, Wyo.	19.5	21.5	5.0	11.5
Cheyenne	19.5	21.5	5.0	13.0
Butte, Mont.	21.0	23.0	6.0	14.5
Billings	22.5	24.5	6.0	14.5
Helena	22.5	24.5	6.0	14.5
Great Falls	22.5	24.5	6.0	14.5
Salt Lake, Utah	21.0	23.0	5.0	16.0
Twin Falls, Ida.	23.0	25.0	6.0	18.0
Boise	22.5	24.5	6.0	18.0
Albu'que, N. M.	19.0	21.0	*6.5	13.0

*Includes one-half cent city tax.

Discount to dealers with or without contract in Continental territory: Undivided dealer discount off service station price 4 cents except in Montana where a discount of 3 cents off tank-wagon price only is allowed; divided dealer accounts, 3½ cents.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
San Francisco	17.0	18.0	4.0	11.5
Los Angeles	16.5	17.5	4.0	9.0
Fresno, Calif.	17.5	18.5	4.0	11.0
Phoenix, Ariz.	21.0	22.0	6.0	‡16.0
Reno, Nev.	19.5	20.5	5.0	13.0
Portland, Ore.	19.5	20.5	6.0	13.5
Seattle, Wash.	19.5	20.5	6.0	13.5
Tacoma	19.5	20.5	6.0	13.5
Spokane	22.5	23.5	6.0	16.5

Discounts to dealers: on gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: on tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

‡Includes 5-cent state tax.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Atl'tic City, N.J.	13.0	....	4.0	9.0
Newark	13.0	....	4 0	7.5
Annapolis, Md.	14.6	....	5.0	10.0
Baltimore	14.0	....	5.0	8.0
Cumberland	16.6	....	5.0	10.0
Wash'g'n, D.C.	12.0	15.5	3.0	9.0
Danville, Va.	17.2	20.7	6.0	12.9
Norfolk	16.0	19.5	6.0	11.3
Petersburg	16.3	19.8	6.0	11.7
Richmond	16.3	19.8	6.0	11.7
Roanoke	17.5	21.0	6.0	12.9
Charles'n, W. Vt.	15.8	....	5.0	12.6
Parkersburg	15.1	....	5.0	11.2
Wheeling	15.0	....	5.0	12.2
Charlotte, N. C.	18.4	....	7.0	12.6
Hickory	18.9	22.4	7.0	13 0
Mt. Airy	18.7	....	7.0	12.8
Raleigh	18.0	....	7.0	12.1
Salisbury	18.5	....	7.0	12.7
Charleston, S. C.	17.0	20.5	7.0	11.1
Columbia	18.0	21.5	7.0	12.1
Spartanburg	18.7	22.2	7.0	12.9

Tank-wagon gasoline refers to dealer instead of retail prices.

Price basis to dealers: Undivided dealers at regular price less one-half cent. Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except in New Jersey, where no discount (if necessary) is given.

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150 gallon lots if covered by contract.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Philadelphia, Ba.	16.5	17.5	5.0	9.5
Pittsburgh	17.5	19.5	5.0	9.0
Allentown	16.75	....	5.0	9.5
Erie	17.5	18.5	5.0	8.0
Scranton	16.75	....	5.0	10.0
Altoona	17.5	19.5	5.0	9.5
Dover, Del.	17.0	....	5.0	10.0
Wilmington	17.0	....	5.0	9.0
Springf'ld, Mass.	13.0	16.5	4.0	7.5
Worcester	14.0	17.5	4.0	7.75
Hartford, Conn.	13.0	16.5	4.0	7.0
New Haven	13.0	16.5	4.0	7.5
Providence, R. I.	12.0	15.5	3.0	7.0

Note—Tank-wagon prices are those applicable to consumers purchasing lots of 100 or more gallons in one delivery.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
N. Orleans, La.	19.5	23.0	*10.0	†13.0
Baton Rouge	17.5	21.0	8.0	11.5
Alexandria	18.0	....	8.0	11.0
Lafayette	18.5	....	8.0	12.5
Lake Charles	18.5	....	8.0	10.0
Shreveport	17.0	20.5	8.0	10.0
Knoxville, Tenn.	20.5	24.0	8.0	14.0
Memphis	18.5	22.0	8.0	9.5
Chattanooga	20.0	....	8.0	11.5
Nashville	19.5	23.0	8.0	10.0
Bristol	19.25	....	8.0	14.5

*Includes 2-cent parish tax. †Includes 1 cent parish tax and 1 cent state tax.

Tank-wagon gasoline refers to dealer instead of retail prices.

Price basis to dealers: Undivided dealers at dealer price less one-half cent.

Louisiana kerosene prices include 1-cent state tax.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Post. deal.	Gasoline Serv. sta.	Gasoline Inc tax	Kero. tank-wag.
Albany, N. Y.	13.0	....	4.0	7.75
*Met. N. Y.:				
Manhtn., Bronx	12.7	....	4.0	7.25
Staten Island	13.0	....	4.0	7.25
Qu'ns & Br'klyn	12.7	....	4.0	7.25
Buffalo	13.5	....	4.0	8.25
Rochester	13.5	....	4.0	8.25
Syracuse	13.5	....	4.0	8.75
Boston, Mass.	13.0	....	4.0	7.50
Portland, Me.	15.0	....	5.0	7.75
Manch'ter, N. H.	15.5	....	5.0	8.00
Burlington, Vt.	16.5	....	5.0	8.75

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes.

Southwestern District

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Dallas, Tex.	15.0	17.0	5.0	7.5
Fort Worth	15.0	17.0	5.0	8.5
Houston	16.0	18.0	5.0	8.5
San Antonio	15.0	17.0	5.0	7.5
El Paso	17.0	19.0	5.0	8.0
Muskogee, Ok.	16.0	18.0	5.0	8.0
Okla. City	16.0	18.0	5.0	8.0
Tulsa	16.0	18.0	5.0	8.0
Ft. Smith, Ark.	16.5	18.5	5.0	8.0
Little Rock	19.0	21.0	7.5	9.5
Texarkana	16.5	18.5	5.0	8.5

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Omaha	17.8	19.8	6.0	9.5
McCook	18.5	20.5	6.0	10.2
Norfolk	18.2	20.2	6.0	9.9
North Platte	18.6	20.9	6.0	10.3
Scotts Bluff	19.3	21.3	6.0	11.0

Note—Discounts to dealers: where service station gasoline prices are (maximum overall, including rent) as follows: Reliance, 2½ cents; Standard Red Crown, 3½ cents; Red Crown Ethyl, 3½ cents.

Where service station gasoline prices are below normal resellers' allowances are reduced one-half of the amount below normal, down to the following (minimum overall, including rent): Reliance, 2 cents; Standard Red Crown, 3 cents; Red Crown Ethyl, 3 cents. Discounts to consumers for tank-wagon deliveries covered only by standard commercial consumers contract effective January 1, 1935.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Ohio points	17.5	19.5	5.0	*13.5

*Includes state tax of 1 cent.

Canada*

3-Star Imperial Gasoline

IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Hamilton, Ont.	21.0	23.5	6.0	17.6
Toronto, Ont.	21.0	23.5	6.0	17.6
Brandon, Man.	29.8	32.8	7.0	22.4
Winnipeg, Man.	28.2	31.2	7.0	20.7
Regina, Sask.	29.5	32.5	7.0	22.0
Saskatoon, Sask.	32.3	35.3	7.0	24.8
Edmonton, Alta.	30.5	33.5	7.0	24.2
Calgary, Alta	28.0	31.0	7.0	21.5
Vancouver, B. C.	22.0	26.0	7.0	23.0
Montreal, Que.	18.5	....	6.0	17.5
St. John, N. B.	24.0	28.0	8.0	18.5
Halifax, N. S.	24.0	28.0	8.0	18.5

*Imperial gallon used in Canada.

Discount to dealers: Divided dealers pay 3 cents per gallon below station price; undivided dealers pay 4 cents per gallon below station price except in cities of Hamilton, Toronto and Montreal where discounts below station price are one-half cent per gallon less and in Vancouver where discounts are 1 cent per gallon more.

Retail Price Changes

Standard Oil Co. of Kentucky September 19 reduced tank-wagon and station gasoline .5 cent in Montgomery; September 23 reduced tank-wagon kerosene .5 cent in Paducah; September 25 reduced tank-wagon gasoline 1 cent and station gasoline 1.5 cents and October 5 further reduced tank-wagon gasoline in Paducah; September 26 reduced tank-wagon and station gasoline 1 cent in Covington; September 28 advanced tank-wagon gasoline .75 cent and station gasoline 2 cents in Augusta; September 29 reduced tank-wagon and station gasoline 1 cent in Lexington and Louisville.

Standard Oil Co. of New Jersey October 3 reduced tank-wagon gasoline .5 cent in Annapolis.

Standard Oil Co. of Louisiana October 3 reduced tank-wagon kerosene 1 cent in Lake Charles.

Rocky Mountain Runs

Estimated daily average production of the Rocky Mountain fields for the week ending October 10 was as follows:

	Bbls.
WYOMING	
Salt Creek	16,390
Big Muddy	1,480
Byron	2,330
Grass Creek	1,630
LaBarge	1,450
Lance Creek	5,830
Lost Soldier	1,240
Oregon Basin	4,000
Rock River	1,600
Miscellaneous	5,110
Total Wyoming	41,060
MONTANA	
Cut Bank	9,120
Kevin	4,360
Pondera	1,580
Miscellaneous	1,070
Total Montana	16,130
COLORADO	
Iles dome	3,710
Miscellaneous	1,170
Total Colorado	4,880
NEW MEXICO	
Artesia	700
Cooper	7,250
Eunice	23,920
Hobbs	23,710
Hogback	300
Jal	3,300
Lea	1,220
Maljamar	2,310
Monument	15,020
Rattlesnake	420
Table Mesa	40
Total New Mexico	78,190
Total region	140,260

PRICES OF REFINED PRODUCTS

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of October 13, 1936

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 octane and below (3d gr.)	.04⅝	.04¾
63-67 octane	.05	.05¼
68-70 octane (regular)	.05⅝	.05¾
60-62 400 grades:		
62 octane and below (3d gr.)	.04⅝	.04¾
63-67 octane	.05	.05¼
68-70 octane (regular)	.05	.05¾
64-66 375	.04⅞	.05
68-70 360	.05	.05⅛

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.04⅝	.04¾
63-67 octane	.05	.05¼
68-70 octane (regular)	.05⅝	.05¾
60-62 400	.04⅝	.04⅞
64-66 375	.04⅞	.05

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U. S. Motor grades:		
62 octane and below	.05½	.05⅝
63-67 octane	.06¼	.06⅜
68-70 octane (regular)	.06½	.06⅝

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:		
62 octane and below	.05½	.05⅝
63-67 octane	.06¼	.06⅜
68-70 octane (regular)	.06½	.06⅝

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04⅝	.04¾
63-67 octane	.05	.05¼
68-70 octane (regular)	.05⅝	.05⅝
60-62 400 grades:		
62 octane and below	.04⅝	.04¾
63-67 octane	.05	.05¼
68-70 octane (regular)	.05⅝	.05⅝
64-66 375	.04¾	.05
68-70 360	.05	.05⅛

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane		.05⅝
60-64.9 octane		.07
65-70 octane		.07¼
64-66 375		.06⅛
68-70 350		.06⅝

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.07	.08
58-60 400	.07⅝	.08⅛

EAST COAST (domestic)—

U. S. Motor below 60 octane:		
*New York (Bayonne)		.06¼
Baltimore		.06¼
U. S. Motor, 60-64.9 octane:		
*New York (Bayonne)		.06⅛
Philadelphia	.06⅛	.06⅜
Boston		.06⅜
Baltimore	.06⅛	.06⅜
Charleston, S. C.		.06⅜
U. S. Motor, 65 and above:		
*New York (Bayonne)		.06⅜
Philadelphia	.06⅜	.07
Boston		.07
Baltimore	.06⅜	.07
Charleston, S. C.		.07

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane	.05½	.05⅝
60-64.9 octane	.05⅞	.06
65 octane and higher	.06	.06¼

Naphtha

PENNSYLVANIA (inland refineries)—

50-52 450 (blending)		.05½
52-54 450 (blending)		.05⅝
54-56 450 (blending)		.05⅞

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.04⅛
Grade 18-55	.05¼	.05½
Low vapor pressure grade:		
*14-pound v.p. (max.)	.05⅞	.06
*12-pound v.p. (max.)	.06¼	.06½

*Nominal.

NORTH TEXAS—

Grade 26-70		.04¼
Grade 18-55	.05	.05⅛

CALIFORNIA—

75-85 375-390	.07	.07⅝

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70	.04⅝	.04¾

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p., 110 flash, 540-550 e.p.	.03½
41-43 gr., 300-350 l.b.p., 110-125 flash, 500-520 e.p.	.03¾
46-48 gr., 210-230 l.b.p., 480 max. e.p.	.04½

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.03¼	.03⅜
42-44	.03⅜	.03½

NORTH TEXAS—

41-43	.03¼	.03⅜

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43	.03⅜	.03⅞

ARKANSAS (Ark., N. La., Miss. del.)—

41-43	.04	.04¼

PENNSYLVANIA (inland refineries)—

45	.04¾	.04⅞
46	.04⅞	.05
47	.05	.05⅛

CHICAGO (Based on Group 3)—

41-43	.03⅛	.03¼
42-44	.03⅜	.03½

CALIFORNIA (Pac. Coast market)—

38-40 high burning test	.03½	.05

NEW YORK (Bayonne, N. J.)—

41-43	.04⅝

GULF COAST (domestic)—

41-43	.03⅞

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

No. 1 prime white, 38-42	.03½	.03¼
No. 1 straw, 38-40	.03⅛	.03¼
No. 2 straw, 32-36	.03	.03⅛
No. 2 dark, 32-36	.02⅞	.03⅛
No. 3, 28-32	.02⅝	.03
No. 3, 15 and above, 28-32	.02⅜	.02⅞

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅜	.03¼
No. 1 straw, 38-40	.03	.03⅛

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03	.03⅛

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36		.03¼
No. 3, 28-32		.03

CHICAGO (Based on Group 3)—

No. 1 prime white, 38-40	.03	.03¼
No. 1 straw, 38-40	.02⅞	.03⅛
No. 2 straw, 32-36	.02⅞	.03
No. 2 dark, 32-36	.02⅞	.03
No. 3, zero to 15, 28-32	.02¾	.03
No. 3, 15 and above, 28-32	.02½	.02⅝

NEW YORK (Bayonne, N. J.)—

*No. 1	.04½	.04⅝
*No. 2	.04¼	.04⅜
*No. 4		.04

*Barge deliveries one-eighth to one-fourth cent under above, tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.02⅝	.02¾
No. 4, low cold test, 24-28	.95	1.05
No. 4, 15 and above, 24-28	.80	.85
No. 5, low cold test, 18-22	.72½	.80
Below 18 fuel oil, industrial	.70	.75

NORTH TEXAS—

U.G.I. gas oil	.02⅛	.02⅜
No. 4, low cold test, 24-28	.95	1.00
No. 5, low cold test, 18-22	.72½	.80
Below 18 fuel oil, industrial	.65	.75

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U.G.I. gas oil	.02⅝	.02¾
10-14 fuel oil, industrial	.70	.75

ARKANSAS (Ark., N. La., Miss. del.)—

10-14 fuel oil, industrial	.60	.65

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02½	.02¾
No. 4, low cold test, 24-28	.95	1.00
No. 4, 15 and above, 24-28	.80	.82½
No. 5, low cold test, 18-22	.72½	.75
No. 6, low cold test, 10-16	.62½	.67½

PENNSYLVANIA (inland refineries)—

36-40	.04⅝	.04½

CALIFORNIA—

Los Angeles:		
30-34 gas oil, per bbl.	.95	1.15
24 plus diesel	1.00	1.25
24 plus diesel (bunkers)	1.05	1.30
12-16 (bunkers at tidewater)	.85	.95
10-16 (cargo lots)	.75	.95
12-17 (tankcars)	.70	.95
San Joaquin Valley:		
10-18 (tankcars)	.70	.75
San Francisco:		
27 plus diesel		1.35
24 plus diesel (bunkers)		1.35
10-16 (bunkers)		1.00

GULF COAST—

28-30 gas oil	.03¼	.03⅜
28-30 diesel (bunkers)		1.50
Bunkers (bulk cargoes)		.95
Bunker C (bunkers)		.95

NEW YORK (Bayonne, N. J.)—

27 plus gas oil		.04½
28-30 diesel (lighterage 6¼ per bbl.)		1.65
28-30 diesel (tankcars)	.04¼	.04½
*Bunker C (to ocean-going ships in N. Y. harbor)		1.15
Industrial fuel (tankcars)		.03⅜

*Lighterage charge 5c bbl. additional.

Bright and Steam-Refined

OKLAHOMA (Group 3)—

Bright Stocks:		
190-200 D, 15-25		.21
150-160 D, 0-10		.18
150-160 D, 15-25		.17½
150-160 E, 15-25		.17
100-110 D, 0-10		.16½
Steam refined:		
631 green (treated)		.13½
600 dark green (untreated)		.05½

PENNSYLVANIA—

Bright Stocks (Pennsylvania grade No. 8 color, 145-50 at 510; 540-550 flash):

10 pour test	.24	.24½
15 pour test	.23	.23½
20 pour test	.22	.22½
25 pour test	.21	.21½
Steam refined:		
600	.12¾	.13
650	.14½	.15
600 Pennsylvania flash	.15½	.16
630 flash	.17½	.18
600 Warren E filtered	.15½	.16

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:		
150-3		.08½
180-3		.09½
180-4		.09
200-3		.10
200-4		.09½
250-3		.11
250-4		.10½
280-3		.12
280-4		.11½
300-3½		.12½
400-3½		.13½
100-2½ paraffin oil		.05¾
15-20 Cold Test:		
200-3		.09½
200-4		.09
250-3		.10½
250-4		.10
280-3		.11½
280-4		.11

GULF COAST—

Pale Oils:		
200-3	.06½	.07
300-3	.07	.07½
500-3½	.08	.08½
750-3½	.08½	.09
1,200-3½	.09	.09¼
2,000-4	.09¼	.09½
Red Oils:		
200-5-6	.06½	.06¾
300-5-6	.06¾	.07
500-5-6	.07½	.08
750	.08	.08½
1,200-5-6	.08½	.09

CALIFORNIA (moving to dom. market)

Pale Oils:		
100-2½-3		.06
200-2½-3		.06¼
300-3-3½		.06½
400-3-4	.08½	.09¼
450-3-4	.09¾	.10
550-3-4	.10	.10¼
600-3-4	.10¼	.10½
Red Oils:		
200-4-5		.06
300-5-6		.06¼
350-5-6	.07	.08
400-5-6	.08	.08¼
450-5-6	.08¼	.08½
500-5-6	.08½	.09
600-5-6½	.09	.09½
700-6½ plus	.09¾	.10
750-6½ plus	.10	.10¼
900-6½ plus	.10¼	.10½

PENNSYLVANIA—

150 vis. at 750° F. color, 400-405 flash:		
Zero pour test	.20½	.21
10 pour test	.19½	.20
15 pour test	.19	.19½
25 pour test	.18	.18½
180 vis. at 70° F., 3 color:		
25 pour test	.20½	.21
200 vis. at 70° F., 3 color:		
Zero pour test	.24	.24½
10 pour test	.23	.23½
15 pour test	.22½	.23
25 pour test	.21½	.22

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale	.02½	.02⅝

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0240	.0245
124-126 (a.m.p.) w.c. scale	.0250	.0255

NEW YORK—

Wax in bags fully refined:		
122-125 (a.m.p.) wax		.0445
125-127 (a.m.p.) wax		.0455
128-130 (a.m.p.) wax		.0480
130-132 (a.m.p.) wax		.0505
133-135 (a.m.p.) wax		.0535
135-137 (a.m.p.) wax		.0560
124-126 (a.m.p.) w.s.	.0240	.0250
124-126 (a.m.p.) y.s.	.0240	.0245
Petrolatum in barrels, carload lots:		
Dark green		01⅞
Amber	.02⅞	.03
Extra amber	.03	.03⅛
Lily white	.06⅝	.06⅞
Snow white	.07⅜	.07⅞
Cream	.05⅝	.05⅞

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.05¼
60-62 400		.05⅝
61-63 390	.05⅜	.05½
64-66 375		.05½

LOS ANGELES—

U. S. Motor grades:		
53-55 octane		.04⅝
55-65 octane	.04⅝	.05
65-67 octane		.05
67-69 octane		.05¼
Above 69 octane		.05½
65 and above 400 e.p.	.05½	.06

KEROSENE

GULF COAST—

41-43 prime white		.03⅝
41-43 water white		.03¾
44 water white		.04½

LOS ANGELES—

41-43 water white	.04½	.05

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbls.)—

Cylinder Stocks:	
600 Warren E	.22
600 S.R. unfiltered	.20
650 S.R. unfiltered	.19¾
600 flash S.R.	.22
630 flash S.R.	.23½
Bright Stocks:	
8 color	.28
6½ plus color in dilution	.27

NEUTRAL OIL

200-3 color	.27½
150-3 color	.24

PARAFFIN WAX

NEW YORK (prices per pound)—

123-125 a.m.p.		.04125
125-127 a.m.p.		.0425
128-130 a.m.p.		.0450
133-135 a.m.p.		.0525
135-137 a.m.p.		.0550
Crude scale:		
124-126 w.s.	.0260	.0270
124-126 y.s.	.0245	.0250

CRUDE OIL PRICES

Oklahoma, Kansas, North Central and East Central Texas

(January 9, 1936)

East Texas*	$1.15
Van, Tex.†	1.02
Altus and Tipton, Okla.‡	1.08
Other fields (see gravity table).	

*All companies. †Pure Oil Co. ‡Gulf Oil Corp.

West Texas

Crane, Upton, Howard, Glasscock and Mitchell Counties	$ .80
Winkler County	.85
Lea County, N. Mex.	.85
Pecos County*	.85
Pecos shallow†	.75

*Shell Petroleum Co., Gulf Pipe Line Co. and Humble Oil & Refining Co. †Shell Petroleum Corp.

Note—For Humble, Magnolia and Texas Co.'s West Texas and Lea County prices see gravity table. Above prices are those of other buyers.

Rocky Mountain States

(Effective January 9, 1936)

Iles, Colo., light*	$1.06
Iles, Colo., heavy*	1.00
Greybull, Wyo.*	1.28
Torchlight, Wyo.*	1.29
Grass Creek, Wyo., light*†	1.18
Grass Creek, Wyo., heavy*†	.72
Hamilton Dome, Wyo.*	.67
Elk Basin, Wyo., light*†	1.18
Frannie, Wyo., heavy*	.72
Frannie, Wyo., light (Feb. 24, 1936)*	.78
Hogback, N. Mex.*	1.21
Pondera, Mont., (Jan. 29, 1936)*	1.05
Salt Creek, Dutton Creek and Midway, Wyo., take Stanolind's Oklahoma prices on a gravity basis.	
Big Muddy, Wyo.†	1.11
Rock Creek, Wyo.†	1.12
Artesia, N. Mex. (Jan. 9, 1936)‡	.80
Maljamar, N. Mex. (Jan. 9, 1936)‡	.80
Fort Collins and Wellington, Colo. (Jan. 9, 1936)‡	See Note
Florence, Colo.	.98
Lance Creek, Wyo.	.85
Lost Soldier, Wyo. (Sept. 30, 1933)	.83
Hudson, Wyo. (June 2, 1931)	.65
Sunburst, Mont. (June 5, 1936)	1.15
Cat Creek, Mont.	1.28
Cut Bank, Mont.	1.35

*Stanolind Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co.

Note—Fort Collins and Wellington are not posted, price 5 cents under quotation of Salt Creek crude of like gravity (Fort Collins 36°; Wellington 33°). *Stanolind Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co. Cut Bank by Toronto Pipe Line Co.

Southwest Texas

(January 9, 1936)

Saxet	$ .90
Mirando	.85
Pettus	1.25
Salt Flat*	.97
Salt Flat‡	.97
Darst Creek*	.97
Darst Creek†	.97
Luling	.90
Lytton Springs	1.00
Duval County	.85

*Humble Oil & Refining Co. †Magnolia Petroleum Co., Gulf Pipe Line Co. and Texas Co. ‡Shell Petroleum Corp. Saxet posted by Humble and Texas; Mirando by Humble and Magnolia; Pettus by Humble; Salt Flat by Humble; Luling and Lytton Springs by Magnolia; Duval by Texas Co.

Gulf Coast

(January 9, 1936)

Cleveland, Tex.	$1.10
Hardin, Tex.	1.03
Greta, Tex.	.90
Refugio, Tex., heavy	.90
Tomball, Tex.	1.30
LaFitte, La.	1.12
Livingston, Tex.	1.15
Bosco, La., (Jan. 16, 1936)	1.05
Evangeline, La.	1.07
Welsh, La.	.96

Cleveland and Hardin by Magnolia; Greta by Texas Co.; Refugio by Humble; Tomball by Humble and Magnolia; LaFitte by Texas Co.; Bosco by Pure; Evangeline and Welsh by Stanolind Oil & Gas Co.; Livingston by Shell Petroleum Corp.

Middle Western States

OHIO OIL CO.

Lima (Sept. 22, 1936)	$1.15
Illinois (Jan. 9, 1936)	1.23
Princeton, Ind. (Jan. 9, 1936)*	1.23
Midland, Mich. (Sept. 16, 1936)*	1.32
Midland, Mich. (Sept. 28, 1936)†	1.37
West Branch, Mich. (Sept. 16, 1936)	1.16
Muskegon, Mich.	1.00
Eastern Kentucky:	
Big Sandy River (Jan. 9, 1936)	1.30
Kentucky River (Jan. 9, 1936)	1.38
Western Kentucky (Jan. 9, 1936)	1.23

'Posted by Simrall Corp. and Pure Oil Co. and includes Greendale, Porter, Beaverton and Crystal crudes. West Branch, Mich., by Simrall Corp. Eastern Kentucky crude purchased by Ashland Refining Co., Ashland, Ky. †Old Dutch Refining Co.

North Louisiana and Arkansas

Smackover, all grades (Jan. 10, 1936)*	$.75
Smackover, all grades (Jan. 9, 1936)†	.80
Tullos and Urania (Jan. 10, 1936)	.97
Nevada, Ark. (Jan. 10, 1936)	.65
El Dorado East field (Jan. 16, 1936)	.75
Converse, Holly, Pleasant Hill and Zwolle (Jan. 10, 1936)*	1.10
Lisbon, Ark. (Jan. 10, 1936)*	1.10
Elm Grove, La. (Jan. 10, 1936)	.80

*Stanard Oil Co. of Louisiana, Gulf Refining Co., Louisiana Oil Refining Co., Texas Co. (effective January 14) and Magnolia Petroleum Co. (effective January 16). Urania by H. L. Hunt Co. and Louisiana Oil Refining Co. Nevada by Standard of Louisiana, El Dorado East field by Magnolia Petroleum Co. Phillips Petroleum Co. (effective January 17), posts 75 cents for all grades in Union and Ouachita Counties, Arkansas.

Eastern States

TIDE WATER PIPE LINE CO.

(Effective Jan. 13, 1936)

Bradford, Pa.	$2.45
Allegany, N. Y.	2.45

SOUTH PENN OIL CO.

(Effective Jan. 13, 1936)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	2.45
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	2.17
Pennsylvania Grade Oil in Eureka Pipe Line lines	2.12
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.97
Corning Grade Oil in Buckeye Pipe Line Co.'s lines (Sept. 18, 1936)	1.32

PENNZOIL CO.

(Effective Jan. 13, 1936)

Pennsylvania Grade Oil in National Transit Lines:	
Group A	2.42
Includes Cochran, Franklin, Hamilton and Doolittle districts.	
Group B	2.41
Includes Titusville district.	
Group C	2.40
Includes Turkey and Tidioute districts.	
Group D	2.39
Includes Bear Creek and Porkey districts.	
Group E	2.36
Includes Edeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts.	
Price depends on lengths of pipe line haul to plant at Oil City.	

PURE OIL CO.

(Effective Jan. 13, 1936)

Cabin Creek, W. Va.	$2.12
Bradford Hollow, W. Va.	2.12
Eelly Creek, W. Va.	2.12

Canada

Ontario (Sept. 9, 1933):	
Petrolia*	$2.10
Oil Springs	2.17
Turner Valley (Feb. 3, 1936):†	
Clean naphtha	2.70
Discolored naphtha	2.46
Crude oil, 50 gravity	2.32
Crude oil, 45 to 49.9	2.12
Crude oil, 40 to 44.9	1.55

*Imperial Oil, Ltd. †Imperial Oil, Ltd. and Regal Oil & Refining Co.

Mexico

Panuco*	$ .895

*F.o.b. ship, based on September transactions and exclusive of production and export taxes and bar dues.

Horace Allen has been made sales manager of the Rock Island Refining Co. at Duncan, Okla. He was promoted from the position of Oklahoma sales representative, to which J. P. Runyan was appointed.

K. A. Schmidt, division geologist for Tide Water Oil Co., Shreveport, La., is on vacation in Missouri.

Crude Prices by Gravities

Gravity—	Oklahoma, Kansas, and Salt Creek, Wyo.	Central and North Texas	East Central Texas	North Louisiana, Arkansas	Gray County, Texas	Carson and Hutchinson Counties, Texas	Conroe, Texas	West Texas and Lea County, New Mexico	Gulf Coast, Texas and Louisiana	Anahuac and Dickinson, Texas	Iowa and Cameron Meadows, Texas
Below 20	....	....	....	....	....	....	....	....	$.92	....	$.82
20-20.9	....	....	....	....	....	....	....	....	.94	....	.84
21-21.9	....	....	....	....	....	....	....	....	.96	....	.86
22-22.9	....	....	....	....	....	....	....	....	.98	....	.88
23-23.9	....	....	....	....	....	....	....	....	1.00	....	.90
24-24.9	....	....	....	....	....	....	....	....	1.02	....	.92
Below 25	$.86	....	....	$.78	....	....	....	....	....	....	....
25-25.9	.88	....	....	.80	....	....	....	....	1.04	....	.94
26-26.9	.90	....	....	.82	....	....	....	....	1.06	....	.96
27-27.9	.92	....	....	.84	....	....	....	....	1.08	....	.98
28-28.9	.94	....	....	.86	....	....	....	....	1.10	....	1.00
Below 29	.94	$.84	$.91	....	....	....	....	$.75	....	....	1.02
29-29.9	.96	.86	.93	.88	....	....	....	.76	1.12	....	1.04
30-30.9	.98	.88	.95	.90	....	....	....	.78	1.14	$1.04	1.04
31-31.9	1.00	.90	.97	.92	....	....	....	.80	1.16	1.06	1.06
32-32.9	1.02	.92	.99	.94	....	....	....	.82	1.18	1.08	1.08
33-33.9	1.04	.94	1.01	.96	....	....	....	.84	1.20	1.10	1.10
34-34.9	1.06	.96	1.03	.98	....	....	....	.86	1.22	1.12	1.12
Below 35	....	....	....	....	$.86	$.81	....	....	....	....	....
35-35.9	1.08	.98	1.05	1.00	.88	.83	$1.24	.88	1.22	1.14	1.12
36-36.9	1.10	1.00	1.07	1.02	.90	.85	1.26	.90	1.22	1.16	1.12
37-37.9	1.12	1.02	1.09	1.04	.92	.87	1.28	.90	1.22	1.18	1.12
38-38.9	1.14	1.04	1.11	1.06	.94	.89	1.30	.90	1.22	1.20	1.12
39-39.9	1.16	1.06	1.13	1.08	.96	.91	1.32	.90	1.22	1.22	1.12
40 and over	1.18	1.08	1.15	1.10	.98	.93	1.34	.90	1.22	1.24	1.12

Magnolia Petroleum Co. in the East Central Texas field pays 7 cents per barrel less than above posted prices in that field.

STANDARD OIL CO. OF CALIFORNIA AND UNION OIL CO.

Crude oil prices at the well effective June 22, 1936

Gravity—	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Dominguez	Elwood Terrace	Torrance	Richfield	Whittier E. Coyote (La Habra)	Montebello	W. Coyote Hills	Santa Fe Springs	Mountain View	Elk Hills Buena Vista Hills Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Santa Paula*	Orcutt*
14-14.9	$.80	$.79	$.74	$.78	$.79	$.80	$.76	....	....	....	$.80	$.76	$.76	$.77	$.78	....	....	$.70	$.70	$.70	....	....	$.70	....
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.70	....
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.70	$.70
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.71	.70
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	....	.82	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.73	.72
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	....	.85	.76	.78	.77	.78	....	$.70	.74	.74	.71	$.70	....	.75	.74
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	....	.88	.78	.82	.77	.80	....	.70	.78	.78	.72	.70	....	.77	.77
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	....	.91	.80	.85	.77	.84	$.78	.73	.82	.82	.74	.70	....	.79	.80
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	....	.93	.84	.89	.79	.88	.78	.77	.87	.86	.78	.72	....	.82	.83
23-23.9	.95	.86	.77	.96	.99	1.02	.96	$.84	$.79	....	.96	.88	.93	.82	.92	.78	.80	.92	.90	.83	.76	....	.85	.86
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	....	.99	.91	.96	.85	.96	.82	.84	.97	.94	.86	.79	....	.87	.88
25-25.9	1.03	.95	.83	1.03	1.05	1.11	1.03	.93	.83	....	1.02	.95	....	.89	.99	.86	.88	1.01	.98	.90	.83	....	.90	.91
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	....	1.05	.98	....	.92	1.03	.90	.91	1.06	1.02	....	....	....	.92	.93
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	....	1.02	....	.96	1.06	.95	.95	1.10	1.06	....	....	....	.95	....
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	....	1.06	....	.99	1.10	.99	.99	1.15	1.10	....	....	....	.97	....
29-29.9	1.17	1.15	.93	1.18	1.18	F.O.B.	1.17	1.12	.93	....	....	1.09	....	1.03	1.14	1.03	1.02	1.20	1.14	....	....	....	.99	....
30-30.9	1.21	1.19	.95	1.22	1.21	our	1.21	1.17	.95	F.O.B.	....	....	....	1.07	1.17	1.08	1.06	1.25	1.18	....	....	....	1.01	....
31-31.9	....	....	....	....	1.24	Pipe	1.24	1.22	.97	Ship	....	....	....	1.11	1.21	1.12	1.09	1.29	....	....	....	....	....	....
32-32.9	....	....	....	....	1.27	Line	1.27	1.27	1.00	....	....	....	....	1.14	1.25	1.16	1.13	1.34	....	....	....	....	....	....
33-33.9	....	....	....	....	....	....	....	1.32	....	$1.28	....	....	....	1.18	1.28	1.20	1.17	1.38	....	....	....	$1.19	....	....
34-34.9	....	....	....	....	....	....	....	1.37	....	1.32	....	....	....	1.22	1.32	1.25	1.20	....	....	....	....	1.23	....	....
35-35.9	....	....	....	....	....	....	....	1.42	....	1.35	....	....	....	1.25	....	1.29	....	....	....	....	....	1.27	....	....
36-36.9	....	....	....	....	....	....	....	1.46	....	1.39	....	....	....	1.29	....	1.33	....	....	....	....	....	1.31	....	....
37-37.9	....	....	....	....	....	....	....	1.51	....	1.43	....	....	....	1.32	....	1.37	....	....	....	....	....	1.35	....	....
38-38.9	....	....	....	....	....	....	....	1.56	....	....	....	....	....	1.36	....	1.42	....	....	....	....	....	1.39	....	....
39-39.9	....	....	....	....	....	....	....	1.61	....	....	....	....	....	1.40	....	....	....	....	....	....	....	1.43	....	....
40-40.9	....	....	....	....	....	....	....	1.66	....	....	....	....	....	1.43	....	....	....	....	....	....	....	....	....	....

Newhall, McKittrick, Kern River, Kern Front and Round Mountain, 70 cents for all grades. Santa Paula and Orcutt posted by Union Oil Co. Same company's Brea Canyon schedule stops at $1.14 for 28 degrees and over, and Belridge and Lost Hills schedule stops at $1.32 for 37 degrees and over.

MARKET RECORD, ACTIVE OIL STOCKS

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Members New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1936 High	1936 Low	Week ended Oct. 10 Sales	Week ended Oct. 10 High	Week ended Oct. 10 Low	Week ended Oct. 10 Close	Stocks—	Total shares outstanding	Par value	Dividend rate	Payable or last paid	Dividends paid in 1935	1935 High	1935 Low	1934 High	1934 Low
125½	75	3,500	106½	100	101½	Amerada Corp.	788,675	N.P.	50cQ	10-31-36	$2.00	80	48½	55⅝	39
35⅛	26⅝	19,900	29	28	28⅝	Atlantic Refining	2,664,904	$25	25cQ	9-15-36	1.00	28	20½	35¼	21½
20	14¼	77,900	19¾	18⅛	19¼	Barnsdall Corp.	2,131,090	$5	20cQ	11-2-36	‡.20	14¾	5⅞	10	5⅞
23⅜	14	83,000	21	19½	20½	Columbia Gas & Elec.	11,610,036	N.P.	20c	5-15-36	.20	15¾	3⅜	19¼	6⅝
15¼	11½	74,500	14⅛	13¾	14⅛	Consolidated Oil Corp.	13,983,287	N.P.	40cQ¶	11-16-36	.25	12¼	6½	14¼	7¼
38½	28⅛	33,600	35	33¾	35	Continental Oil of Delaware	4,682,671	$5	50cQ¶	10-31-36	.62½	35	15⅛	22¾	15¾
34¾	21	10,100	26⅝	24⅞	25⅝	General Asphalt	387,149	$10	25c	12-17-35	.25	22½	11¾	23½	12
12¼	6⅜	67,600	10½	9½	10⅛	Houston Oil (new)	1,098,618	$25	....	10-17-30	....	7	1½	5⅝	2½
27	17¼	24,200	27	25¾	27	Mid-Continent Petroleum	1,843,872	$10	40cSA	6-1-36	.40	20½	9½	14¾	9⅛
26¼	16¾	3,600	20¾	19⅜	20	Mission Corporation	1,399,345	N.P.	....	.....	....	17¾	10⅜	..	..
69½	19⅞	18,500	67¾	60	67½	National Supply of Delaware	382,591	$25	....	5-15-31	....	20⅞	9	21½	10
17½	12⅛	68,900	14	12⅞	13¾	Ohio Oil Co.	6,563,377	N.P.	25cSA	6-15-36	.80	14¼	9¼	15⅞	8½
18	11¾	7,200	16⅛	15	16	Pacific Western Oil	1,000,000	N.P.	40c	11-30-34	.25	14	6¾	9⅜	5½
4¼	1⅜	1,400	2¾	2½	2⅝	Panhandle P. & R.	198,770	N.P.	....	.....	....	1⅞	½	2½	⅝
49⅜	38⅛	45,400	45½	44⅛	45¼	Phillips Petroleum	4,152,836	N.P.	50cQ¶	9-1-36	1.25	40	13¾	20¾	13⅜
17⅛	11⅞	14,800	16¾	16	16½	Plymouth Oil Co.	1,050,000	$5	25c	9-30-36	.25	13	6½	16¾	7¼
24⅞	16	80,000	19⅛	17⅝	18⅝	Pure Oil Co.	3,038,370	N.P.	....	9-1-30	....	17	5⅞	14⅞	6⅛
43⅝	30½	19,400	35¼	32⅝	34	Seaboard Oil of Delaware	1,244,283	N.P.	25cQ	9-15-36	1.00	36⅞	20¾	38⅜	20¾
24¾	14¾	21,500	24¾	23¼	23¾	Shell Union Oil	13,070,625	N.P.	....	6-30-30	....	16½	5½	11½	6
124¼	110½	3,300	123	121¼	122⅞	Shell Union Oil pfd.	400,000	$100	1.37½	7-1-36	....	111	63⅛	89	57
6¾	3½	500	4¼	4¼	4¼	Simms Petroleum	461,698	$10	1.25 liq.	7-20-36	11.75 liq.	18¾	4¾	17⅛	7¼
31½	19½	11,500	31¼	29⅛	31¼	Skelly Oil	1,008,514	$15	....	12-15-30	....	20½	6½	11½	6
17	12½	291,900	16⅝	14	16⅝	Socony-Vacuum	31,151,075	$15	25cSA	9-15-36	.30	15¾	10⅝	19⅞	12½
47⅝	35	45,600	39¼	36¼	39¼	Standard Oil of California	13,014,754	N.P.	30cQ¶	9-15-36	1.00	41⅛	27¾	42⅞	26½
40⅛	32¾	28,600	39⅜	38⅛	39¼	Standard Oil (Indiana)	15,215,677	$25	25cQ†	9-15-36	1.00	33⅜	23	32¾	23¼
30¾	25	1,400	30¾	27¾	30¾	Standard Oil of Kansas	200,000	$10	....	10-31-34	....	32	20	41	26
70	51⅛	54,600	65¼	62⅝	65¼	Standard Oil of New Jersey	25,856,081	$25	75cSA¶	6-15-36	‖1.25	52⅜	35¾	50⅛	39¼
91	72	1,400	81¼	76¾	81	Sun Oil	1,733,013	N.P.	25cQ	9-15-36	$1 & 7% Stk.	77	60½	74¼	51½
43⅜	28⅞	82,600	43⅜	39½	42¾	Texas Corp.	9,340,069	$25	25cQ†	10-1-36	1.00	30¼	16½	29⅜	19⅝
15¼	7½	53,400	14⅛	12⅝	13⅜	Texas Pacific Coal & Oil	880,703	$10	25c	8-1-36	....	9¼	3¼	6½	2½
19½	14¾	29,500	19½	18¾	19	Tide Water Associated	5,642,342	N.P.	15cQ	9-1-36	....	15⅞	7⅝	14⅜	8
106½	100⅝	600	104⅞	103⅞	104¼	Tide Water Associated pfd.	626,221	$100	$1.50Q	7-1-36	$6.50	104½	84	87	64½
28½	20¾	15,900	23⅞	21⅞	23½	Union Oil of California	4,386,070	$25	25cQ	8-10-36	1.00	24	14¾	20½	11½
31⅝	22⅝	3,200	30	28¾	29¾	Union Tank Car Co.	1,200,000	N.P.	30cQ	9-1-36	1.20	26½	20⅞	25¾	15⅝
5¼	2¾	6,000	3⅝	3	3½	Wilcox Oil & Gas	424,839	$5	....	5-10-28	....	3⅛	1	5¾	2

•Ex-dividend. †Plus extras. ‡Also 50 per cent in stock of Barnsdall Ref. §Partly on account of accumulation. ‖Dividend 4/75 Mission Corp. paid 3-15-35. ¶Includes extras.

New York Curb Exchange

1936 High	1936 Low	Week ended Oct. 10 Sales	Week ended Oct. 10 High	Week ended Oct. 10 Low	Week ended Oct. 10 Close	Stocks—	Total shares outstanding	Par value	Dividend rate	Payable or last paid	Dividends paid in 1935	1935 High	1935 Low	1934 High	1934 Low
21	13¼	4,900	20⅝	18¾	18¾	Bridgeport Machine Co.	260,000	N.P.	....	5-1-30	....	14⅛	3¾	3¾	⅛
50	39¾	300	45½	44¼	45	Buckeye Pipe Line Co.	200,000	$50	75cQ	9-15-36	$3.00	42½	30½	38	26
4⅛	1⅞	49,400	2⅞	2⅛	2¼	Carib Syndicate	799,020	25c	....	.....	....	4¼	1⅝	5½	1½
124¾	105	250	119	118	118	Chesebrough Mfg. Co.	120,000	$25	$1.50Q	9-30-36	6.50	157	115	150	116
7⅜	3	90,100	4½	4	4½	Cities Service	37,804,394	N.P.	....	6-1-32	....	3¼	¾	4¼	1¼
4	⅝	No sales	..	..	..	Colon Oil	2,200,000	N.P.	....	.....	....	2⅛	½	3¼	½
4⅛	1½	13,900	2¾	2¼	2½	Cosden Oil	399,687	$1	....	.....	....	1½	¼	3⅞	½
34¾	19⅞	39,400	29⅜	27½	29¼	Creole Petroleum	6,974,356	$5	25c	7-15-36	.20	23¾	10	14⅜	9⅝
12	9	2,400	13⅛	12⅜	12¾	Darby Petroleum	351.390	$5	25cSA	7-15-36	.50	8⅞	4	7½	4⅛
4⅝	1⅞	16,000	6¾	4¼	6⅛	Derby Oil & Refining	263,162	N.P.	....	.....	....	2	¾	2¼	1
44	39	50	46	46	46	Eureka Pipe Line	50,000	$50	$1Q	11-2-36	4.00	38	33¼	37	30
104¾	72	8,900	101¾	99	101	Gulf Oil Corp.	4,538,101	$25	25c	10-1-36	....	74¾	50¼	76¾	49¾
76½	57	5,100	67	63½	67	Humble Oil & Refining (new)	8,923,935	N.P.	50c†	10-1-36	1.25	64	44	49½	33¼
24½	20	17,400	22½	21⅛	22½	Imperial Oil of Canada	26.919.871	N.P.	62½cSA‡‡	6-1-36	1.25	22½	15⅜	17⅞	12⅝
9¾	5½	300	9¾	9⅝	9⅝	Indiana Pipe Line	300,000	$10	40cSA†	11-14-36	.35	6⅛	3⅝	6⅞	3⅝
39⅝	32⅞	14,700	37	35¼	36⅝	International Petroleum	14,247.088	N.P.	$1.25†‡	6-1-36	2.50	39¾	28	33⅜	19⅜
15⅜	9⅞	14,300	12⅞	11½	12¾	Louisiana Land & Exp.	3,000,000	N.P.	10cQ	6-15-36	.10	11⅜	4⅜	5	2⅛
15	7⅜	2,800	14¼	13¾	13⅞	Lion Oil Refining	270,000	N.P.	50c	10-15-36	....	8⅛	3½	6	3⅜
14¼	9⅞	22,300	14¼	13¾	13¾	Lone Star Gas	5.382.723	N.P.	20cSA	8-15-36	.30	10⅞	4½	8⅜	4¼
8⅜	5	4,900	5½	5¼	5⅜	Mountain Producers	1,682,182	$10	30cSA	7-1-36	.90	5¾	4⅛	5½	4
23	17⅝	4,400	20⅜	19¾	20⅜	National Fuel Gas	3,810,183	N.P.	25cQ	10-15-36	1.25	20	11¾	18⅛	13⅛
15¾	9¼	700	12	11½	11⅞	National Transit	509.000	$12.50	40cSA	6-15-36	.75	10⅝	6¾	9½	7
4½	2⅞	2,500	3⅞	3⅜	3½	New Bradford Oil	1,445.202	$5	10cSA	5-15-36	.20	3¼	2	2½	1¾
6⅝	1⅝	3,900	3¾	3¼	3½	New Mexico and Arizona	1,000,000	$1	....	.....	....	2½	1	2¾	1
6¼	4½	100	5⅛	5⅛	5⅛	New York Transit	100,000	$5	15cSA	4-15-36	.30	4⅞	3	4¾	3
9¼	4⅞	500	9¼	9	9	Northern Pipe Line	120.000	$10	15cSA	7-1-36	.50	8	5¼	7	4⅝
6⅝	3¼	82,000	6⅛	5⅝	6	Pantepec Oil	1.608.700	N.P.	....	.....	....	4⅜	1¼	2⅝	⅞
19¼	4½	5,900	15⅞	14½	15½	Root Petroleum Co.	336.045	$1	25c	8-1-36	....	5	1½	..	..
4¾	1⅞	1,900	3⅜	3	3⅜	Ryan Consolidated	296,931	N.P.	....	.....	....	2½	⅝	3⅜	⅞
10	7	11,400	6½	5⅞	6½	Salt Creek Producers	1.496.859	$10	40cSA	6-30-36	1.20	7½	5½	7⅞	5½
40½	32½	1,100	40¾	40	40¼	South Penn Oil	1,200,000	$25	60c†	9-30-36	1.35	34½	21⅝	26½	17½
7⅞	3¼	700	4¾	4½	4¾	Southern Pipe Line	100.000	$10	15cSA	3-2-36	.30	5	3⅞	5½	3½
60	54	No sales	..	..	..	Southwest Penna. Pipe Lines	35,000	$50	$1.00Q	10-1-36	5.00	56	44¼	47	41
23¾	17⅛	10,200	19½	18⅝	19½	Standard Oil of Kentucky	2,604.790	$10	35c	9-15-36	1.25	24	18	18⅜	14⅝
14⅝	11	800	12½	12	12⅜	Standard Oil of Nebraska	188.403	$25	....	6-20-34	....	12	7¾	16⅞	8¼
36¼	21¾	3,100	33¾	31½	33⅝	Standard Oil of Ohio	753.740	$25	25c	10-15-36	....	23⅝	11½	28½	12¼
5	2⅝	3,400	3½	3¼	3¼	Sunray Oil	1.610.810	$1	....	4-15-31	....	2⅞	⅞	2	††
9¾	5½	1,800	5⅝	5½	5½	Texon Oil & Land	336.028	N.P.	15cQ	9-30-36	.60	6⅞	5	11	4⅜
7½	4⅜	12,100	6	5⅜	5¾	Texas Gulf Producing Co.	888,087	N.P.	....	12-29-34	....	4¾	2½	7	3⅝

•Ex-dividend. †Includes extras. ‡Payable in Canadian funds.

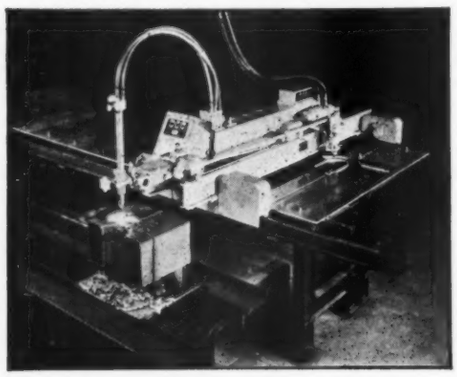
Note—In comparing highs and lows for the several years in the two tables, it will be necessary to take into consideration cases where there have been stock split-ups.

NEW OR IMPROVED EQUIPMENT

Linde Shape-Cutting Machine Adds to Accuracy and Scope

The new Oxweld type CM-12 shape-cutting machine introduced by the Linde Air Products Co. is designed to give the accuracy and range of work demanded more and more of the flame cutting processes. Its precision, simplicity and economy of operation widen the scope of shape cutting.

The flexibility of this machine allows almost limitless possibilities for its use. Any shape, from



the simplest to the most complicated, can be accurately produced either automatically with templets or guided by hand. The immediate transfer of motion from one end of the machine to the other is a factor in assuring precision in all cutting operations. In addition to cutting shapes of all description, the machine will cut **straight** lines automatically in any direction and **at any** bevel. Cuts as long as 144 inches are possible and an important feature lies in the fact that straight line cuts can be made at any desired angle in the horizontal plane. A special circle-cutting attachment is provided, permitting the automatic production of circles from 2 to 24 inches in radius. Still another feature is that of multiple cutting. The apparatus is designed to carry from two to five blowpipes which can perform multiple cutting operations under all the conditions possible with a single blowpipe.

Bulletins, Booklets and Other Literature for the Trade

A study of tube corrosion in the oil industry is presented in a 16-page booklet available from the Chase Brass & Copper Co., Waterbury, Conn.

A method of repairing pipe leaks without shutdown is described in a bulletin offered by M. B. Skinner Co., South Bend, Ind.

The latest issue of the Byron Jackson News Letter, published by Byron Jackson Co., Berkeley, Calif., is devoted to installations of the pickup pumping unit, known as the "Pup." The units are marketed through McGregor & Thilenius, Tulsa.

A compilation of data, interesting to all concerned with the efficient transfer of high-temperature heat, has been published for free distribution by Dow Chemical Co., Midland, Mich., in a booklet entitled "Dowtherm for High Temperature Heat Transfer Systems."

Two new data books are announced by the Rockwood Manufacturing Co., 1801 English Avenue, Indianapolis, Ind. No. 782, for multiple-groove drives, and No. 783, for fractional-horsepower single-groove drives, cover a range from fractional to 500 horsepower and present the data in a simple manner, which makes it easy to select a Rockwood V-belt drive.

The current number of the Bridgeport Bulletin, published by the Bridgeport Machine Co., Wichita, Kans., features the company's cable-tool drilling unit.

The mechanical goods division of United States Rubber Products, Inc., New York, has issued a loose-leaf reference catalog for use in the oil industry by engineers, superintendents and executives on the application of rotary hose, specialized packings and V belts to modern rotary drilling operations.

A six-cylinder diesel which can be cranked by hand is described and illustrated in a bulletin obtainable from International Harvester Co., 606 South Michigan Avenue, Chicago.

Long Establishes Export Office

Jon R. Long, Fort Worth, Tex., designer and manufacturer of oil-field equipment, has established an export office with the Petroleum Machinery Corp., 30 Rockefeller Plaza, New York. He also has opened a warehouse at 859 Hope Street, Shreveport, La., in charge of Jon R. Long, Jr. It carries a complete stock of pumping and gas-lift equipment.

Charles Glasscock Is on Sales Staff of Thornhill-Craver

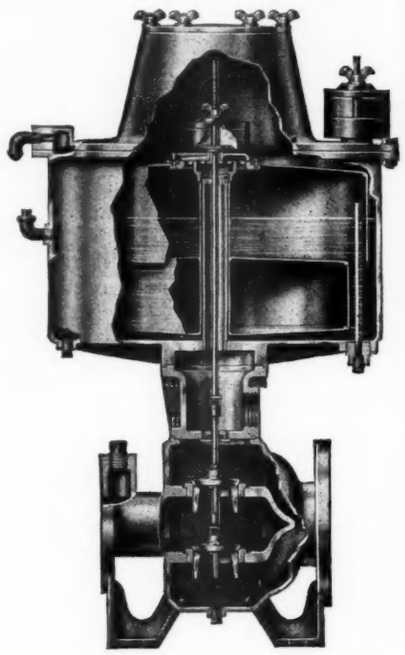
Charles Glasscock, well known in the oil fields of East Texas, North Louisiana and Arkansas through experience in the supply business, has been

CHARLES GLASSCOCK

appointed sales representative in that area for Thornhill-Craver Co. He is making his headquarters in Shreveport for a close coverage of the Rodessa field. Mr. Glasscock began his oil-field work roughnecking for Mills Bennett Production Co. in the Gulf Coast.

Pressure or Vacuum Condition Is Controlled by Regulator

The S. & J. vapor recovery regulator, announced by Shand & Jurs Co., Berkeley, Calif., can be used



to control either vacuum or pressure conditions simply by turning the disc valve in the top of the inverted regulator pan to either setting. It is designed to permit the removal or admission of gases, from one tank or a series of tanks at a low and positive pressure. In case it is desired not to repressure, a single regulator to control outflow only is used. It operates with hairspring sensitivity within a range of less than one-tenth inch up to 2 inches of water on either pressure or vacuum. The weight of all moving parts is counterbalanced by a liquid submerged float with an effective lifting area of 200 square inches. Every ounce added to or taken from the counterbalanced weight changes the operating pressure one-two-hundredth of an ounce.

The regulator requires no limits between which it will operate since the action is positive at exactly the pressure at which it is set. It requires no adjustment during operation, the setting being made by placing weights on the top of the float assembly. Dependent only upon the capacity of the valve to handle the volume of vapor, one regulator set-up may be used for a battery of tanks. By connecting the control pipe to the flow-line of the tank, this unit adapts itself to numerous applications for control of vapors in or out of scrubbers or any installation where sensitive control of vapor pressures is desired.

Welding Headquarters Opened

The electric welding section of the National Electrical Manufacturers Association has established development headquarters in the Frick Building, Pittsburgh, Pa., and initiated a program of cooperative industry development to investigate the electric welding market and determine the possibilities of extending it. Special attention will be given to application engineering. H. S. Card, formerly editor of the Welding Engineer, is in charge.

Hydril Appoints Jack Engstrom Chief Engineer of Company

R. L. (Jack) Engstrom has been appointed chief engineer of the Hydril Co. Mr. Engstrom has been

R. L. ENGSTROM

with the company more than nine years as assistant chief engineer and has been closely associated with Fred Stone, chairman, and Bert L. Stone, vice president and general manager, in the development of Hydril products. His headquarters will be in the Torrance factory.

Latest General Electric Motor Has New Insulation System

A new design of riveted-frame squirrel-cage polyphase induction motors, in frame sizes of 1 to 15 horsepower at 1,800 r.p.m., has been placed on the market by the General Electric Co., Schenectady, N. Y. The new motors, which are announced as available in a variety of electrical and mechanical modifications, incorporate improvements in stator-coil insulation, frame construction, and other design features.

Coordination of design permits the different

modifications of motors in the line to be used interchangeably for many types of power supplies and for various applications requiring open, sleeve- or ball-bearing, enclosed, fan-cooled, splashproof, vertical motors, etc. As a result of this adaptability many special requirements may be met with the standard available line.

A new insulation system, "built from the inside out," is employed for the stator-coil windings, which are of the random-wound type, with joints at the connections fused instead of soldered. Recently developed insulating materials and processes are utilized, eliminating the need for taping the end windings and producing an insulation assembly with high resistance to moisture and other common deleterious influences, such as mild acids, alkalis, oil and abrasion, the manufacturers say. A new riveted-frame construction and new end frames made of malleable iron, with integrally cast feet, contribute to strength and rigidity, providing increased resistance to vibrating and shock loads.

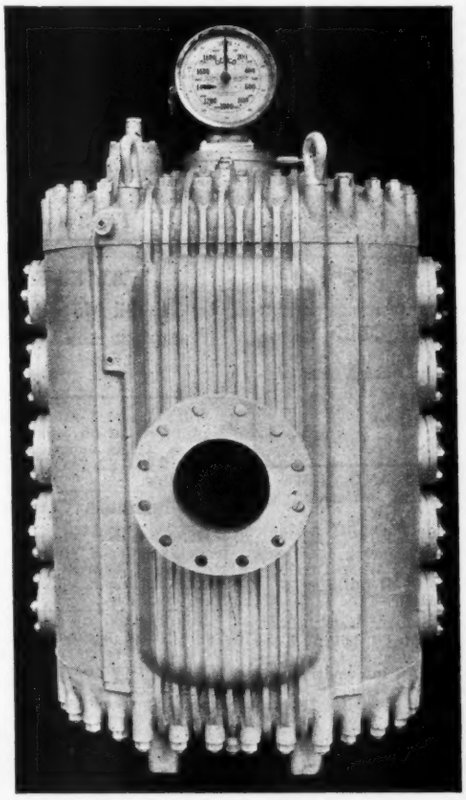
S. M. Kintner Dies

Dr. Samuel Montgomery Kintner, vice president in charge of engineering, of the Westinghouse Electric and Manufacturing Co., internationally known in the engineering world for his research work and pioneering in the development of radio communication and broadcasting, died at his home in Pittsburgh, Pa., September 28.

Meter for Japan Has Capacity of 1,000 Gallons a Minute

The 1,000-gallon-a-minute meter recently shipped by the Oceco division of the Johnston & Jennings Co., 877 Addison Road, Cleveland, Ohio, for service in Japan, will be used in metering various petroleum products ranging in viscosity from lubricating oil to gasoline. The meter, according to company engineers, is the largest of the Oceco stock standard Type C positive displacement vertical meters and will meet fully, even at this high capacity, the customer's requirements of constantly maintained accuracy regardless of variations in temperature, viscosity or pressure. The outer casing, designed with fluted ribs which add strength without too great additional weight, is a semi-steel casting in which two cylindrical chambers are provided. These are fitted with specially designed double-acting pistons which oscillate back and forth the full length of a fixed stroke as the material passes through, registering the amount of passage on the recording dial. The pistons function also as their own valves, consequently there are no levers, valve-gears or delicate mechanisms to get out of order.

Slippage and leakage of the material past the pistons with resultant inaccuracy of measurement are eliminated by using automobile-type expanding



piston rings. These maintain a constant seal against the cylinder walls, and make the Oceco a positive displacement meter in fact as well as theory.

Ben Hilliard Is to Cover Kansas Territory for Byron Jackson

Ben Hilliard, formerly in the sales department

BEN HILLIARD

for Byron Jackson, has been assigned to cover the Kansas oil country, with headquarters in Wichita.

Here and There With Men Who Manufacture Equipment

The Bristol Co., Waterbury, Conn., has appointed four graduate engineers to its field service organization: E. H. Hart, Boston office; J. N. Swarr, New York office; K. J. Platt, Philadelphia office; R. A. Barnes, St. Louis office.

The Four Wheel Drive Auto Co., Clintonville, Wis., has made Albert Fillnow director of inventory parts' sales and William Elliott service engineer.

The Babcock & Wilcox Tube Co., Beaver Falls, Pa., announces changes in its southwestern sales territory. H. S. Dershimer is now Tulsa district sales manager, with offices in the Philtower Building. The Dallas, Tex., headquarters will be at 728 Wilson Building in charge of Reid R. Lumsden. O. E. Berg will be in charge of the company's office at 1007 Electric Building, Houston, Tex.

W. C. Straub, formerly manager of the New York branch office of the Chicago Pneumatic Tool Co., has been appointed assistant to the executive vice president. A. D. Stem succeeds Mr. Straub.

The Linde Air Products Co., unit of Union Carbide & Carbon Corp., has opened a new district office at 2 Virginia Street, Charleston, W. Va., with A. R. O'Neal as manager.

The Dearborn Chemical Co. is completing an extension to its main manufacturing plant located in the central manufacturing district of Chicago. This is the third major addition in a dozen years and gives a 16 per cent increase in floor space.

J. Nowery Smith in New Iberia

H. A. Koop, widely known in oil equipment circles, has become associated with J. Nowery Smith Supply Co. of Houston, Tex., and has been made district manager with headquarters in New Iberia, La. Mr. Koop for some time has been with the Standard Supply Co. of New Orleans, and for 10 years was connected with the Republic Supply Co. J. Nowery Smith Supply Co. is opening a branch store in New Iberia, where considerable activity is under way. Two new fields have been opened within the past year. A site for a store has been obtained at Jefferson and Jane Streets and construction of a store building will be started immediately.

Gulf Coast Fields

(Continued from Page 152)

the east side of the Gillis field, Union Sulphur Co. No. 2 Kaufman was washed in from a screen setting made in sand at 7,371-77 feet, total depth, and flowed 700 bbls. of pipe line oil per day through a quarter-inch choke. It is 600 feet north of No. 1 Kaufman, a recent extension to the field, completed in the 7,000-foot sand. The completion of No. 2 Kaufman opens the fourth producing horizon in the field and adds considerable acreage for development.

West Texas Fields

(Continued from Page 158)

10 bbls. McCreat and others No. 1 Searle Estate, dry and abandoned, 1,148 feet. Russell and Russell No. 1 Wiesen and others, 1,159 feet, 1,000,000 feet of gas. E. M. Schaffner No. 1 Vestel, dry and abandoned, 1,900 feet. Ungren & Frazier No. 4 Jackson, dry and abandoned, 1,560 feet. R. H. Vise No. 1 Ross, dry and abandoned, 1,475 feet. L. A. Warren No. 1-B Jackson, 1,016 feet, 4,650,000 feet of gas.

Comanche County

Baughman No. 1 Kochman, dry and abandoned, 1,504 feet.

Coleman County

Eppenauer Drilling Co. No. 5 Shields, 1,905-25 feet, 50 bbls.

Shackelford County

Ambassador Oil Corp. and others No. 7 Dyer, dry and abandoned, 1,000 feet. J. C. Asbury No. 1 Wills, dry and abandoned, 1,004 feet. Charter Oil Co. No. 9 Mimms, 1,594-1,607 feet, shot, 233 bbls. Crawford and others No. 2 Morris and Buie, 1,559 feet, 200 bbls. Daniels and others No. 1 Morris and Buie, dry and abandoned, 1,720 feet. Grisham-Hunter, Inc., and others No. 3 Davis, 1,623-40 feet, acidized, 12 bbls. Grover and others No. 1 Nail, 1,375 feet, 25 bbls. S. Henderson No. 1 Hickman, dry and abandoned, 700 feet. Hoffman and Page No. 23 Morris and Buie, 1,597 feet, shot, 10 bbls. Humble Oil & Refining Co. No. 3 Nail, dry and abandoned, 1,854 feet. Putman Supply Co. No. 3-B Morris and Buie, 1,591-1,602 feet, 100 bbls.; No. 5-B Morris and Buie, 1,593-1,605 feet, shot, 200 bbls.

Reliance Oil and Royalty Co. and others No. 3 Morris and Buie, 1,570-90 feet, 237 bbls.; No. 4 Morris and Buie, 1,574-97 feet, 200 bbls.; No. 4-B Nail, 1,517-38 feet, 30 bbls. Roberts and others No. 1 Davis, 1,712-25 feet, 186 bbls. Reeser & Pendleton, Inc., No. 13 Dawson and others, 1,591-1,600 feet, shot, 75 bbls. Reeser & Pendleton, Inc., and Humble Oil & Refining Co. No. 31 Morris and Buie, dry and abandoned, 1,615 feet. Root & Rhodes No. 2 Dawson and others, 1,314-24 feet, 15 bbls. H. Slicker No. 7 Matthews, 905 feet, plugged back to 847 feet, 10 bbls.; No. 8 Matthews, 847 feet, 8 bbls. Ungren & Frazier No. 1 Lieb, dry and abandoned, 1,632 feet. Warren Matthews No. 1 Matthews, 941 feet, 7 bbls. White & Duncan No. 4 Morris and Buie, 1,579-88 feet, shot, 120 bbls.

Stephens County

H. E. Talbott No. 1 Kennedy and others, 3,895 feet, 21,760,000 feet of gas. J. C. Hall No. 10 Pratt, dry and abandoned, 3,860 feet. L.S.G. Co. No. 22 Cooke and Warren, 1,783 feet, 2 bbls. oil and 2 bbls. water.

NORTH TEXAS COMPLETIONS

Baylor County

Consolidated Oil Co. No. 4 Portwood U, 1,433 feet, dry. Petroleum Producing Co. No. 34 Portwood, 1,391-98 feet, 10 bbls.

Cooke County

Anderson & Kerr No. 2 C. A. Brown, 1,985-98 feet, 110 bbls.; No. 3 C. A. Brown, 1,977-83 feet, dry and abandoned 2,700 feet; No. 2 T. C. Delisle, 2,002-25 feet, 100 bbls. Burk Royalty Co. No. 2 C. A. Brown, 1,984-2,010 feet, 250 bbls. Mudge Oil Co. No. 3 S. D. Meador, 1,495-1,554 feet, 20 bbls. Rapp and others No. 3 C. A. Brown, 1,980-2,011 feet, 175 bbls. Rapp Petroleum Co. No. 2 S. M. King, 2,710 feet, dry. Seitz and others No. 6 R. W. Trew, 703-10 feet, 5 bbls. J. C. Shaffer No. 3 L. M. Curry, 2,079-94 feet, 500 bbls. Vindicator Oil Co. No. 8 Walterscheid, 783-98 feet, 10 bbls.

Montague County

Lesh & McCall No. 8 R. W. Cunningham, 922-39 feet, 50 bbls.

Wichita County

Boardman Brothers No. 5 Jackson B, 736 feet, dry. Tom Medders No. 1 J. L. Jackson, 800 feet, dry. Perkins & Cullum No. 19 Burnett, 1,349-57 feet, 20 bbls. A. M. Rowe No. 6 Waggoner, 1,299-1,301 feet, 65 bbls.

Wilbarger County

Fain McGaha No. 2 Waggoner NN, 1,954 feet, dry.

Jack County

Bert Fields No. 2 Lanier, 523 feet, dry. Gwynn & Overby No. 3 Rankin, 2,991-3,010 feet, 200 bbls. Hamilton Petroleum Co. No. 1 Kuykendall, 2,375-97 feet, 200 bbls. W. H. Peckham No. 1 Smith, 3,038 feet, dry. Yorktex Petroleum Co. No. 2 D. C. Clayton, 2,960-88 feet, 300 bbls.

Young County

L. T. Burns No. 1 Rushing, 902-17 feet, 15 bbls. W. F. Collins No. 2 Barnett, 665 feet, dry. W. D. Eastland No. 1 A. R. Manning, 2,727-40 feet, 12 bbls. Fresno Oil Co. No. 5 J. W. Cox, 568-610 feet, 10 bbls. G. E. Grininger No. 1 Prido, 667-709 feet, 10 bbls. L. G. Hawkins No. 16 Kirkland, 745 feet, dry. J. H. Kleiner No. 14 Graham, 593-617 feet, 8 bbls. Panhandle Refining Co. No. 7 Prido, 710-32 feet, 40 bbls.; No. 8 Prido, 760 feet, dry. J. I. Pankratz No. 1 Norton, 962 feet, dry. Rathke Oil Co. No. 1 O. W. Hill, 3,998-4,006 feet, 7,200 bbls. Stuckey Oil & Gas Co. No. 1 Jeffery, 886 feet, dry. Wilbanks No. 1 Jeffery, 900 feet, dry.

CLASSIFIED ADVERTISING

Royalties—Production

Brokers—Salesmen

Sell in the most active area in the United States — The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Securities and Exchange Commission. Inquiries invited.

B. D. BUCKLEY

Paul Brown Bldg., St. Louis, Mo.

PRODUCING OIL ROYALTIES
15 years of experience.
L. H. WITWER
214 Kennedy Bldg., Tulsa, Okla.

PRODUCING OIL ROYALTIES
for dealers
H. P. BOWEN
842 Kennedy Bldg., Tulsa, Okla.

VAN POOL — EAST TEXAS
Bought — Sold — Wholesale.
W. R. Brown & Co., Inc.
14 Prospect Pl., East Orange, N. J.

HIGH GRADE producing oil and gas royalties offered to dealers. Billie Smallwood, P. O. Box 2261, Tulsa, Oklahoma.

Royalties—Production

NEW MEXICO Oil and Gas Leases and royalties. Send 50 cents in stamps for new State Oil Map of New Mexico. Roy G. Barton, Clovis, New Mexico.

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

F. A. SANSOME

Maintains a Complete Trading Organization for Brokers, Banks and Dealers
In
Oil Royalties
522 Fifth Avenue, New York, N. Y.

OKLAHOMA CITY AND FITTS
Royalties Quoted Dealers.
W. E. COOK
Perrine Bldg., Oklahoma City, Okla.

Producing and Non-Producing Royalties.
Bosco, Van, Rodessa, West Texas.
Wholesale — Retail.
W. E. HOUSEL
11 East 44th Street, New York City.

WANTED — Substantial drilling block in Texas, Kansas, or Oklahoma. Good geology and clean deal. All information and data will be treated strictly confidential. R. O. Kermode, 1530 Downing Street, Denver, Colorado.

PROGRESS SYNDICATE LUGANO WISHES TO REPRESENT in Switzerland American Products and Chemical Processes and TO ARRANGE AGENCIES in Tulsa and the U.S.A. for Swiss products. FIRST SWISS DEALERS in oil royalties and lease-interests. Propositions and offers solicited. Henri Brandli, Ingenieur, Poste restante, Lugano, Switzerland.

Royalties—Production

FOR SALE—ROYALTY IN LEA & ROOSEVELT COUNTIES N. MEX. under major oil company leases. J. W. Wallrich, Lovington, New Mex.

For Sale—Maps

WALTER E. WYLIE
Oil Map Publisher
330½ Milam St. Phone 2-6533
Shreveport, Louisiana

Oilfield and County Ownership Maps. New price list on request. Send $1.00 for map of Texas and eastern New Mexico.
ZINGERY OIL MAP CO.
Fair Bldg. Fort Worth, Texas

Business Opportunities

GEOLOGIST desires connection on percentage basis plus expenses. Highest credentials. Address Box G-823, The Oil and Gas Journal, 415 Lexington Avenue, New York City.

New method recovers fine gold. Will revolutionize placer mining. Need partner to finance commercial plant. H. C. Petersen, Route 5, Omaha, Nebr.

Gold-Copper Mine, 6 Pat. claims, 102 acres, Hartford district. Cochise Co., Arizona. 100% sale by reputable estate liquidation. Qualified principals only. $30,000 invest. should return 200% annually. Owners rep. Louis O. Macloon, 148 E. 48th St., New York City.

TRANSPORT PILOT
Oil well driller and contractor will furnish reliable Oil Co. a good airplane free of charge, write for particulars.
JAMES S. CHRISTMAN,
Allentown, Pennsylvania.

Ranches and Farm Lands

160 ACRES unimproved farm land $4 per acre. 1,532 acres ranch proposition, plenty of grass and water $4 per acre. 483 acres, 455 in cultivation, heavy chocolate loam, very productive, good improvements $40 per acre. Luther Calahan, Idabel, Oklahoma.

FOR SALE
FINE SOUTHERN ESTATE

Combination Blue Grass Stock Farm and Tobacco Plantation. Located in middle Tennessee, near Columbia, fronts 1 mile on concrete National Highway No. 43 and is 50 miles south of Nashville. 1,200 acres rich land, abundant water supply. Excellent improvements. Address owner.

JOHN M. GRAY, HARDING ROAD, NASHVILLE, TENN.

FOR SALE: 5,000 acres valley ranch, highly improved on Cimarron River in New Mexico. Headquarters ten-room stone stucco house, modern plumbing. Apple orchard. Large concrete dam on river. Free irrigation water rights. 150 acres irrigated alfalfa. 350 acres in cultivation. Fine grass all over ranch. Deer hunting in canyons. Mile high altitude. Situated on U. S. Highway No. 64. Recently leased for oil development. Must sell, foreclosure within sixty days. Owner. Address Box H-460, The Oil and Gas Journal, Tulsa, Okla.

Financing

PROSPECTUSES prepared and deals shaped up for registration or exemption under Federal Security Act. Fee basis. John Morris, Box 5411, Philadelphia, Pa.

CAPITAL SEEKERS—Put your project before 260 key-men. Cost trifling. Details free. Amster Leonard, Fox Theatre Bldg., Detroit, Mich.

KEY HEADERS, sizes for 3½" and 4½" OD tubes, ideal for cracking, reforming, viscosity breakers, etc. Large stock up-to-date refinery equipment. Priced for quick sale.

Phone— Wire— Write—

BROWN-STRAUSS CORPORATION

Main Office—1446 Guinotte Ave., Kansas City, Mo.

Branches

Sapulpa, Okla. Arkansas City, Kans. Pyote, Texas.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air compressor, Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list. Terms to suit.

CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St. Cincinnati, Ohio.

SEVERAL USED ROTARY RIGS
Spudders and Drilling Machines.
Several Steel Derricks & Rotary Equip.
J. S. Daniel, Beacon Bldg., Tulsa.

GAS METERS
Westcott, Foxboro and Emco Orifice Meters, Large Capacity Iron Case, Sprague and Ironclad Positive Meters. Geo. R. Milner, Okmulgee, Oklahoma.

BARGAINS—Demonstrator Arc Welders. Gasoline and electric drive. 30 days' trial. Easy terms if desired. Write Ken's Exchange, Box OG-1062, Troy, Ohio.

FOR SALE
3—14x7¼x14 Gardner-Denver Slush Pumps. 2—20" Oilwell Imperial Rotaries, Roller Bearing. 1—8" Lucey Upright Draw Works. Complete with braces, Head Board, Drum Skid, Chains and Chain Guards. This material located at Rodessa. P. O. Box 1603, Shreveport, Louisiana.

FOR SALE—42 insulated TANK CARS reasonably priced good condition capacity 8,000 gallons. The Henderson Co., 604 Oliver-Eakle Bldg., Amarillo, Texas.

2—300 Ampere Lincoln Welders, speed control, A-1 condition. Service Co., 3732 Cedar Avenue, Cleveland, Ohio.

FOR SALE
2—12" Model 44 Barber-Greene trenching machines, like new; cheap.
1—6" Model 44 Barber-Greene trencher, condition fair.
1—4" Barber-Greene trencher for curb and conduit; side cutter type.
MERTES MACHINERY CO.
Milwaukee, Wisconsin.

FOR SALE: Two 240 H.P., 180 R.P.M., 3 cylinder Busch-Sulzer Diesel engines in first-class condition with one 187 K W, 240 V, A. C. belt driven generator and direct connected exciter. These engines are now connected together in tandem but could be separated to operate as single units. Will sell either or both units. Price $12.50 per H.P. F.O.B. our plant. STANDARD-TILTON MILLING COMPANY, Dallas, Texas.

FOR SALE—One Double Drum Wilson Spudder complete with lines and tools.
EARL H. CARTER,
Route 4, Longview, Texas, Phone 1788.

Equipment Wanted

Will purchase twenty-five class 2 or class 3 tankcars eight or ten thousand gallon capacity with welded coils or without. Will pay cash. Address Box H-470, The Oil and Gas Journal, Tulsa, Okla.

Professional Services

JOSIAH TAYLOR
CONSULTING GEOPHYSICIST
7 Years Experience
Specializing in Seismic Interpretations in Ark.-La.-Tex.
Giddens-Lane Bldg. Phone 2-6847
Shreveport, La.
Frequent trips to Houston, Texas
Fx 9512 for appointment.

Incorporations

DELAWARE CHARTERS: Complete incorporating and organizing service $35. Submitted forms, Chas. G. Guyer, Inc., Wilmington, Delaware.

CHARTERS—Delaware best, quickest, cheapest, most liberal. Free forms. Colonial Charter Co., Wilmington, Del.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Leases—Production

LANDS Leases, Royalties, anywhere, bought, sold. Lands, $2 acre, up. Leases 25c acre, up. Advise needs. American Investment Co., Houston, Texas.

NORTH Louisiana is oil active, write for drilling blocks, leases, production. G. Lucas, 208 Milam St., Shreveport, La.

WANTED—Core Drilling of any nature, anywhere. Have latest equipment. Will take interest deals with any reliable independent operators. Paul R. King, Box 341, Hutchinson, Kans.

SHELBY County at last has a producing well. Several tests now going down. This County has been worked out and approved by best geologists. Have 1,000 acres on structure for drilling contract. Small bonus. C. A. Parker, Box 451, Center, Texas.

BUY—SELL
Proven Leases in Louisiana-Arkansas
WILLIAM MONROE LAYTON
40 Wall St., Suite 1437, New York City.
323 Commercial National Bank Bldg., Shreveport, La.

?————HOW MUCH————?
is an oil lease worth in event of production? Our new book "Oil Leases" fully covers every phase of oil leases speculation. Rules for successful operation in oil leases. $2.00 per copy. Bert R. Ferris, Chappell, Nebraska.

WANTED—Drilling anywhere in Eastern Kansas or Oklahoma. Forty years experience. Will take interests for partial pay. Let me figure your job. New equipment. H. H. Sherman, 824 North St., Iola, Kansas.

New southwest Texas oil leases in small tracts for brokers and dealers. H. H. White, Box 674, San Antonio, Texas.

80 ACRES, shallow, S.E. Kansas, 400-600 ft., init. prod. aver. 15 bbls. Will drill 6 wells complete $5,000; ½ int. and money back first. Might divide. L. J. Leuthart, driller, Louisburg, Kansas.

GEOPHYSICAL (oil finding) machines rented. We interpretate readings. Geological Scientific Service Co., 957 E. Davis, Fort Worth, Texas.

Shallow Oil-gas eastern Kansas 700 to 900 feet; six producing zones; proven area. Will furnish lease and drill well, $1,500. Full particulars to brokers, others. Mr. Budd, Osawatomie, Kans.

Steel Storage Tanks

50—Practically new 80,000-bbl. steel roof tanks, latest type.

125—55,000-bbl. storage tanks at great saving. Prices quoted on request for tanks standing, cut down, or reerected on your grade. Have all other sizes available. All tanks strictly guaranteed.

Wire—Phone—Write—W. C. Berry

SONKEN-GALAMBA CORPORATION

64 North Second St. Kansas City, Kansas.

Leases—Production

NEW MEXICO—My weekly scout report furnishes complete and reliable information on New Mexico developments. Send for copy. W. S. Patterson, Santa Fe, New Mexico.

25,000 acres Texas leases and well; ¼th interest $10,000. Quick action. W. F. Plagenz, E-110 Lee Ave., Cleveland, O.

Leases-Royalties-Oil properties East Texas, North La., and Southwest Arkansas. Also Parkersburg rig for sale. W. B. Worthen, Atlanta, Texas.

FOR SALE oil and gas leases in Kentucky shallow oil field. Leases furnished for drilling contracts. W. P. Hartley, Bowling Green, Kentucky.

HEMPSTEAD COUNTY, ARKANSAS
I am the owner of several thousand acres of commercial oil and gas leases in Hempstead County. Four wells now drilling, six additional wells to start immediately. Would like to contact reliable salesmen and brokers on extremely liberal terms. V. W. Foster, Hope, Arkansas.

NEW MEXICO LEASES on the Vegas Dome at Las Vegas, N. M. A deep test on a fully geologized structure. It's a real well testing for the big deep production. It offers a real opportunity to the lease buyer. Prices on structural acreage are reasonable. Now is the time to connect. Write or wire,
S. W. Pressey, Pueblo, Colorado.

FOR SALE—½ int. in 1,000 a. with well to be completed in the Trenton Rock, S.W. Ind. La Salle basin. Perfect geol. appr. loc. near prod. F. M. Pierson, Drawer 748, Terre Haute, Ind.

I own 3,000 acres free in N. Pittsburgh & Atoka Cos. 40 to 1,000 A. tracts, no trades. Cash sale, lease or royalty, $5 to $25 per A. Townsite on 2 R.RS. near production. J. E. Cavanagh, Baker, Ore.

FOR SALE—Shallow oil production. Also proven and semi-proven acreage. Want some one to finance drilling well. A. R. Lewis, Corsicana, Texas.

Petroleum Eng. Laboratories

GEOLOGIC STANDARDS COMPANY
1600 East 5th Place, Tulsa, Oklahoma.
Porosity-Permeability-Saturation Tests.

Situations Wanted

CIVIL ENGINEER, surveyor, over nine years with an oil company in South America, seeks similar position. Mapping, topographical surveys in connection with civil engineering works; drainage, flood control, roads, railroads. Also experience on reinforced concrete work. Address Box H-454, The Oil and Gas Journal, 415 Lexington Ave., New York City.

TAX SPECIALIST. Graduate engineering, accounting and law, fifteen years experience oil taxation and valuation, government, public and private practice. Available as head or assistant, tax department of oil company. Address Box H-472, The Oil and Gas Journal, Tulsa, Oklahoma.

First class draftsman desires position. Steel, concrete, refinery and general engineering experience. Address Box H-474, The Oil and Gas Journal, Tulsa, Okla.

Connection with concern desiring to contact oil refining industry for sale of equipment or processes. Have wide acquaintances and excellent contacts among refiners in United States and Canada. Have many years experience in selling this trade. Address Box H-473, The Oil and Gas Journal, Tulsa, Oklahoma.

14 years' experience manufacturing and repair shops in accounting, selling and management. University education. Age 38. Prefer Oklahoma, go anywhere. A-1 reference. Address Box H-480, The Oil and Gas Journal, Tulsa, Oklahoma.

PURCHASING AGENT
Or ACCOUNTANT, fifteen years experience purchasing for Mining and both Producing and Refining Oil Companies. Twelve years Accounting Railroad and Financial Institutions, Address Box H-451, The Oil and Gas Journal, Tulsa, Okla.

SITUATION WANTED—Salesman with 20 years' experience in oil and gas sales work in the southwest desires connection with manufacturing concern. Available October 1st. Salary preferred. References. Address Box H-431, The Oil and Gas Journal, Tulsa, Oklahoma.

Refinery process engineer-economist 10 years experience design and operation. Now employed. Wants position with more work. Address Box H-471, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

WANTED—Draftsman—College graduate in electrical engineering. Very desirable that applicant have experience in instrumentation. State degree received, school attended, past experience, age, telephone number and send photograph if available. Address Box H-452, The Oil and Gas Journal, Tulsa, Oklahoma.

SCOUTS and ENGINEERS—Learn how Big Chief System locates structures. Certain, scientific, inexpensive. Gas & Oil Research Co., Cleveland, Ohio.

Mailing Lists

MAILING LISTS
Royalty investors by deed and retail royalty brokers. Also, brand new list of Fitts pool royalty owners. Personal lists of producers, refiners, gaso. mfrs., pipe lines, drilling contractors, etc. Oil Industry Mailing List Co., 909 Tulsa Loan Bldg., Tulsa, Oklahoma.

Patent Attorneys

REGISTERED PATENT ATTORNEYS
United States and Canada
Before disclosing your invention to anyone, send for blank form:
"Evidence of Conception."
Instructions "How to Establish Your Rights" and complete information FREE!
LANCASTER, ALLWINE & ROMMEL
418 Bowen Building,
Washington, D. C.

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	*1 time*	*$5.00*	
1 Inch	*13 times*	*4.50*	*per inch*
1 Inch	*26 times*	*4.00*	*per inch*
1 Inch	*52 times*	*3.50*	*per inch*

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY

CLASSIFIED RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	*$1.05*	*$1.80*	*$2.25*	*$3.30*	*7 Lines*	*$2.45*	*$4.20*	*$5.95*	*$7.70*
4 Lines	*1.40*	*2.40*	*3.40*	*4.40*	*8 Lines*	*2.80*	*4.80*	*6.80*	*8.80*
5 Lines	*1.75*	*3.00*	*4.25*	*5.50*	*9 Lines*	*3.15*	*5.40*	*7.65*	*9.90*
6 Lines	*2.10*	*3.60*	*5.10*	*6.60*	*10 Lines*	*3.50*	*6.00*	*8.50*	*11.00*

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

INDEX TO ADVERTISERS

A

Abercrombie, J. S., Co. 141
Abercrombie Pump Co. .....
Air Reduction Sales Co. 1
Alco Products, Incorporated .....
Aldrich Pump Co., The 158
Allegheny Steel Company 140
Allis-Chalmers Mfg Co. ... .
Allsteel Products Mfg. Co., The ...
American Askania Corp. 96
American Cable Co., Inc. .....
American Hammered Piston Ring..
American Iron & Machine Works..
American Lubricator Company ....
American Manganese Steel Company
American Meter Company .....
American Roller Bearing Company.
American Sand-Banum Co., Inc. ...
American Steel & Wire Company ..
Arrowhead Iron Works 99
Athey Truss Wheel Co. .....
Atlas Drop Forge 113
Atlas Imperial Diesel Engine Co. .. 59
Auer, C. L., and W. W. 144
Axelson Manufacturing Company ..133

B

Babcock & Wilcox Tubes .....
Badger & Sons Co., E. B. .....
Bakelite Corporation .....
Baker Oil Tools, Inc. .....Back Cover
Barber-Greene .....
Barold Sales Company .....
Barret, William M., Inc. .....
Barrett Company, The .....
Bartlett Hayward Company, The ..
Beaumont Iron Works Co. .....
Bethlehem Steel Co. .....
Boston Woven Hose & Rubber Co.. 85
Bowen, S. R., Co. .....
Bradford Motor Works, Inc. .....
Brewster Company, Inc., The 103
Bridgeport Machine Company 101
Broderick & Bascom Rope Co. 9
Brown Instrument Co., The .....
Buckeye Traction Ditcher Co., The.
Buda Co., The .....
Butler Manufacturing Co. .....
Byron Jackson Co. 105

C

Cameron Iron Works, Inc. 111
Carnegie-Illinois Steel Corporation..
Carson Machine & Supply Co. 112
Cast Iron Pipe Research Association, The .....
Caterpillar Tractor Co. .....
.....Inside Front Cover
Chain Belt Company .....
Chaplin-Fulton Mfg. Co., The 144
Chapman Valve Mfg. Co., The ....
Chemical Process Co., Inc., The ....
Chevrolet Motor Company .....
Chicago Bridge & Iron Works 87
Cities Service Oil Co. .....
Clark Bros. Co. .....
Classified Advertising 182-183
Cleveland Trencher Company, The..
Climax Molybdenum Company 10
Columbian Steel Tank Co. 8
Combustion Engineering Company..130
Continental Oil Co. .....
Continental Supply Company, The.. 23
Cooper-Bessemer Corp., The 41
Coppus Engineering Corp. .....
Corona Products, Inc. 56
Crane Co. .....
Crane Packing Company .....
Crutcher-Rolfs-Cummings, Inc. ....
Cummins Engine Company 150
Curtin, W. H., and Co., The .....

D

Darling Valve & Mfg. Co. .....
Davis Emergency Equipment Co. ..
Davis Regulator Co. .....
Dean Core Barrel Manufacturing
Dearborn Chemical Company .....
Devine, J. P., Mfg. Co., Inc. .....
Dewey Portland Cement Co. 136
Diamond Chain & Mfg. Co. 158
Dodge Mfg. Corporation 22
Doheny Stone Drill Co. .....
Dowell, Incorporated 24
Dresser, S. R., Mfg. Co. 20
DuPont DeNemours & Co., Inc., E. I.

E

Eagle-Picher Lead Co. .....
Eastman Oil Well Survey Co..... 76
Economy Electric Lantern Co. ....
Edward Valve & Mfg. Co., Inc., The
Eiche, R. J. .....
Emsco Asbestos Company .....
Emsco Derrick & Equipment Company .....
Ensign Carburetor Company, Ltd. ..
Ethyl Gasoline Corporation .....
Everstick Anchor Co. .....

F

Failing Supply Co., Geo. E. .....
Filtrol Co. of California .....
Firestone Tire & Rubber Co. .....
First National Bank & Trust Co. of Tulsa, The 135
Fisher Governor Company .....
Fluor Corporation, Ltd. .....
Foote Bros. Gear and Machine Co...
Ford Motor Co. .....
Fort Worth National Bank, The ...
Four Wheel Drive Auto Co., The ...
Foxboro Co., The 14-15
Frick-Reid Supply Corporation 97

G

Gardner-Denver Company .....
Garlock Packing Company, The ...
Gaso Pump & Burner Mfg. Co. .....
Gasoline Products Co., The .....
Gates Rubber Co., The .....
Gatke Corporation 147
Gearench Mfg. Co. .....
General American Tank Storage and Terminal Co., Inc. .....
General Electric Company .....
General Motors Truck Co. .....
General Paint Co. 88
General Power, Inc. 121
Gilmer Company, L. H. 11
Goodrich Company, B. F. .....
Gott, H. P., Mfg. Co. 144
Goulds Pumps, Inc. 123
Grant Oil Tool Company .....
Gray Processes Corporation, The ..
Great Lakes Fuel Corporation, The (Distributors for Great Lakes Coal & Coke Co.)
Green Head Bit & Supply Co. .....
Guiberson Corporation, The .....
Gulf Refining Co. .....

H

Halliburton Oil Well Cementing Co.
Hanlon-Buchanan, Inc. .....
Happy Belting Company 85
Hazard Wire Rope Company 2
Heeter, C. M., Sons Co. .....
Hercules Tool Company 132
Hewitt Rubber Corp. .....
Hills-McCanna Co. 126
Hinderliter Tool Company 114
Hoard Exploration Co. .....
Hopper Machine Works, Inc. .....
Hough Mfg. Co., The Charles N. ...
Houston Oil Field Material Company 141
Hughes Tool Co. .....
..Front Cover and 64A-64B-64C-64D
Humble Oil & Refining Co. .....
Hutchins Winch Co. 145
Hyatt Roller Bearing Co. 13
Hydril Co. .....

I

Independent Exploration Company..
Ingersoll-Rand Co. .....
International Derrick & Equipment Co., The .....
International Filter Co. .....
International Harvester Co. of America, Inc. 12
International Nickel Company, Inc., The .....

J

J & S Carburetor 147
Jarecki Manufacturing Company ..
Jeffrey Mfg. Co. .....
Jensen Brothers Manufacturing Co.
Jerguson Gage & Valve Co. 145
Johns-Manville Corporation 133
Johnston & Jennings Co. (Oceco Division) 158
Jones & Laughlin Steel Corporation

K

Kellogg, M. W., Company, The ....
Kennedy Valve Mfg. Co., The .....
Kerotest Manufacturing Co. .....
Keystone Driller Co. .....
Kibele Manufacturing Co. .....

L

Landis Machine Co., Inc. .....
Lane-Wells Co., The .....
Larkin Packer Co. .....
Layne and Bowler Co., The 130
Layne & Bowler, Inc. .....
Leach Co., C. H., Inc. 144
Leeds & Northrup Company .....
Leonard Construction Co. 7
Leschen, A., & Sons Rope Co. .....
Lincoln Electric Company, The ....
Linde Air Products Co., The .....
Linear Packing & Rubber Co., Inc.
Link-Belt Company 75-160
Lone Star Cement Company Texas. 46
Lucey Products Corporation .....
Ludlow Valve & Mfg. Co., The .....
Lufkin Foundry & Machine Company .....
Lufkin Rule Co., The .....
Lummus Co., The .....
Lunkenheimer Co., The .....

Mc

McCord Radiator & Mfg. Co. .....
McEvoy, J. H., & Co. .....
McGregor Working Barrel Company.159
McKissick Products 156

M

MacClatchie Manufacturing Company 98
Macwhyte Co. .....
Maloney Tank Mfg. Co. .....
Manhattan Rubber Mfg. Division, The .....
Manzel Brothers Company .....
Marley Company, The .....
Marmon-Herrington Co., Inc. .....
Martin-Decker Corp. 148
Mason-Neilan Regulator Co. .....
Mathey Machine Works, C. A. .....
Mattison-Wallack & Co. .....
Medart Company, The .....
Mepham, Geo. S., Corp. .....
Merco Nordstrom Valve Co. .....
Midco Tool & Supply Co. 99
Midwest Piping & Supply Company, Inc., The .....
Miller Fuel Engineering Co., Inc. ..
Miller Sand Pump Co. .....
Mission Mfg. Co., The 92-93
Monsanto Chemical Company 7
Moore, Lee C., & Co., Inc. 44
Moorlane Company .....
Muskogee Iron Works .....

N

National Airoil Burner Company ...122
National Bank of Tulsa .....
National Carbon Company, Inc. 127
National Lead Co. 3
National Supply Co., The 39
National Tank Company .....
National Transit Pump & Machine Co. .....
National Tube Co. 83
Naylor Pipe Company 16
New Deal Specialty Co., The .....
Non-Corrosive Products Co., Ltd. (Mfrs.) .....
Norvell-Wilder Supply Company ...
Nugent, Wm. W., & Co., Inc., Mfrs.

O

O'Bannon Co., Walter .....
Oceco Fittings 158
Oil Center Tool Co. 73
Oil Well Improvements Co. .....
Oil Well Supply Company 71
Oklahoma Portland Cement Co. ...
Oliver United Filters, Inc. .....
Otis Pressure Control, Inc. .....
Owens-Illinois Glass Company 126
Oxweld Acetylene Company .....

P

Page Steel & Wire Division of the American Chain Company, Inc. ..
Parkersburg Rig & Reel Co., The..
Parsons Co., The Ralph M. 62
Patterson-Ballagh Corporation 102
Penberthy Injector Co. .....
Petroleum Electric Power Club 104
Petroleum Equipment Company ...
Petroleum Iron Works Company ...
Petroleum Rectifying Company of Calif. .....
Petroleum Specialty Company, The.
Petty Geophysical Engineering Co. 80-81
Pittsburgh-Des Moines Steel Company .....
Pittsburgh Equitable Meter Co. ...
Pittsburgh Steel Company 21
Polymerization Process Corporation, The .....
Portable Rig Company, Inc. .....
Prest-O-Lite Company, Inc., The ..
Pure Oil Co. .....

R

Ratigan, J. P. .....
Reading-Pratt & Cady .....
Rector Well Equipment Co., Inc. ..119
Reed Roller Bit Company .....
..... 107-108-109-141
Regan Forge & Engineering Co. ...141
Reilly Tar & Chemical Corporation
Republic Rubber Co., The 6
Republic Steel Corporation 18-19
Roebling's, John A., Sons Co. .....
Ryerson & Son, Inc., Joseph T. 145

S

Schlumberger Well Surveying Corporation 89
Security Engineering Co. .....
Seismic Explorations, Inc. 91
Shaffer Specialty Co., The .....
Shaffer Tool Works 90
Shand & Jurs Co. .....
Sharples Specialty Co., Inc. .....
Shell .....
Shull Perforator Co. .....
Sinclair Refining Company, Inc. ...159
S.K.F. Industries, Inc. .....
Skinner Co., M. B. .....
Smith, A. O., Corporation 4-5
Smith Company, E. M. .....
Smith, Nowery J., Supply Company 94
Smooth-On Mfg. Co. .....
Socony-Vacuum Oil Co., Inc. .....
South Central Drilling Company ..113
South Chester Tube Co. .....
Southern Alkali Corporation .....
Spang, Chalfant & Co., Inc. .....
Spang and Company .....
Sperry-Sun Well Surveying Co. ....
Standard Brake Lining Co. .....
Stanton, Robert E. 113
Star Drilling Machine Company ...
Star Manufacturing Company .....
Staynew Filter Corporation .....

T

Taubman Supply Corporation .....
Taylor Forge & Pipe Works .....
Taylor Instrument Companies .....
Texas Chemical Company .....
Texas Iron Works .....
Thornhill-Craver Co., Inc. 95
Timken Roller Bearing Company ..
Timken Steel & Tube Co. 49
Tnemec Company, Inc. .....
Toledo Pipe Threading Machine Co.
Trackson Company .....
Tretolite Co. 17
Tube Turns, Inc. .....
Tulsa Chamber of Commerce .....
Tulsa Winch Mfg. Co. .....
Twin-Disc Clutch Co. 78

U

Union Carbide & Carbon Corporation .....
Union Carbide Sales Company .....
Union Rubber & Asbestos Co. .....
Union Wire Rope Corporation .....
United American Bosch Corp. .....
United States Rubber Company ....
United Supply & Mfg. Company ...
U. S. Steel Corp., Subsidiaries .....
.....26, 71, 83
Universal Atlas Cement 26
Universal Oil Products Co. 42

V

Vellumoid Co., The .....
Vernon Tool Co., Ltd. 141
Vinson Supply Co. .....
Vogt, Henry, Machine Co. .....
Vortox Manufacturing Company ...

W

Wall Rope Works, Inc. .....
Walworth Company .....
Warren Petroleum Company 125
Waukesha Motor Company .....
Wheeling Machine Products Co. 158
Wickwire Spencer Steel Company..
Wilson-Snyder .....
Williams & Co., J. H. .....
Williamsport Wire Rope Co. .....
Wilson Manufacturing Co. .....
Wilson Supply Company 110
W. K. M. Co., Inc. 129
Worthington Pump & Machinery Corporation .....

Y

Yale & Towne Mfg. Co., The .....
Young Engine Corp. .....
Youngstown Sheet & Tube Co., The
.....Inside Back Cover

Oil Man's Calendar

October

25-30—Atlantic City, N. J., first annual convention. Association of Gas Appliance & Equipment Manufacturers. Annual convention American Gas Association, Atlantic City Auditorium.

27—Wichita Falls, Tex., regional technical meeting, W.P.R.A.

27-29—Chicago, National Oil Marketers Association annual convention, Stevens Hotel.

November

3—Shreveport, La., regional technical meeting, W.P.R.A.

5—Los Angeles, Calif., California Natural Gas Association, fall meeting.

5—Shreveport, La., annual meeting Louisiana-Arkansas division, Mid-Continent Oil and Gas Association.

4-5—Indianapolis, Ind., Indiana Independent Petroleum Association, fall meeting.

5-6—Los Angeles, Calif., A.A.P.G., Pacific section, annual meeting.

9-12—Chicago, American Petroleum Institute, 17th annual meeting, Stevens Hotel.

20—Tulsa, annual meeting, Kansas-Oklahoma division, Mid-Continent Oil and Gas Association.

November-December

30-Dec. 1—Oklahoma City, Okla., Independent Petroleum Association, Biltmore, annual meeting.

December

4—Houston, Tex., annual meeting, Texas division, Mid-Continent Oil and Gas Association.

5-13—Detroit, Mich., First International Consumers Petroleum Exposition.

6-11—New York, National Exposition of Chemical Industries, Grand Central Palace.

15—Tulsa, annual meeting directors, Mid-Continent Oil and Gas Association.

February, 1937

8-10—Louisville, Ky., Kentucky Petroleum Marketers Association, Brown Hotel.

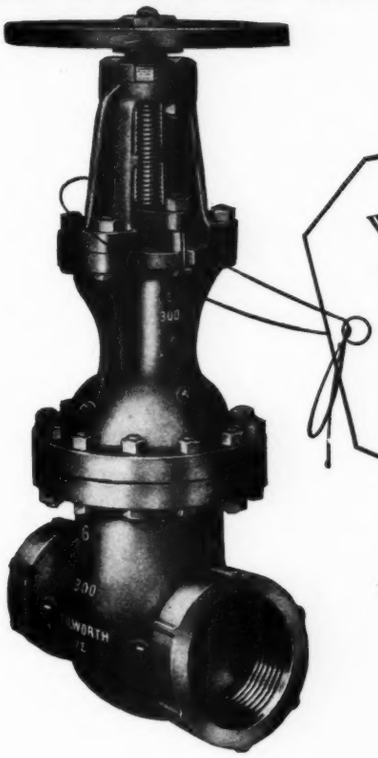
March

16-18—Los Angeles, Calif., A.A.P.G. annual meeting.

April

15-16—Cleveland, Ohio, 34th semiannual meeting National Petroleum Association, Cleveland Hotel.

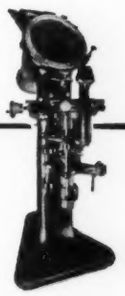
WALWORTH 350 LB. S. P. VALVES for Oil Field Boiler Service



Walworth Series 300 WL Sigma Steel Valves for 350 lb. S. P., 580° F., are made in sizes from 1½" to 24"—Globe, Angle, Wedge Gate and Swing Check.

Out in the field, where approval is based on performance under actual operating conditions, oil industry engineers put their O.K. on Walworth Valves. These valves have set new standards of durability and dependability of performance.

Among the complete line of Walworth Valves which makes possible "the correct valve for any and every specific service" this line of 350 lb. steam pressure bronze and steel valves complies with the recommended practice in the oil industry. Detailed information is contained in circular 69. Write for a copy.



PRE-PROVING WALWORTH QUALITY

The comparator shown above magnifies tool, gauge and valve details for checking dimensions to ten-thousandths of an inch—dimensions which can be verified in no other way. The comparator is one of the many devices with which Walworth predicts the uniform high quality of its products—a quality which field performance finds unsurpassed.

WALWORTH

VALVES FITTINGS and TOOLS
Backed by 94 Years' Service

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription prices: Domestic, $6.00 a year; foreign, $7.00 a year. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Oklahoma, under the Act of March 3, 1879.

When a single battery of tanks can run into 4 or 5 figures it's high time to stop, look and compare before you buy . . . and make sure, that dollar for dollar, you're getting full value for your money. You OWE it to yourself.

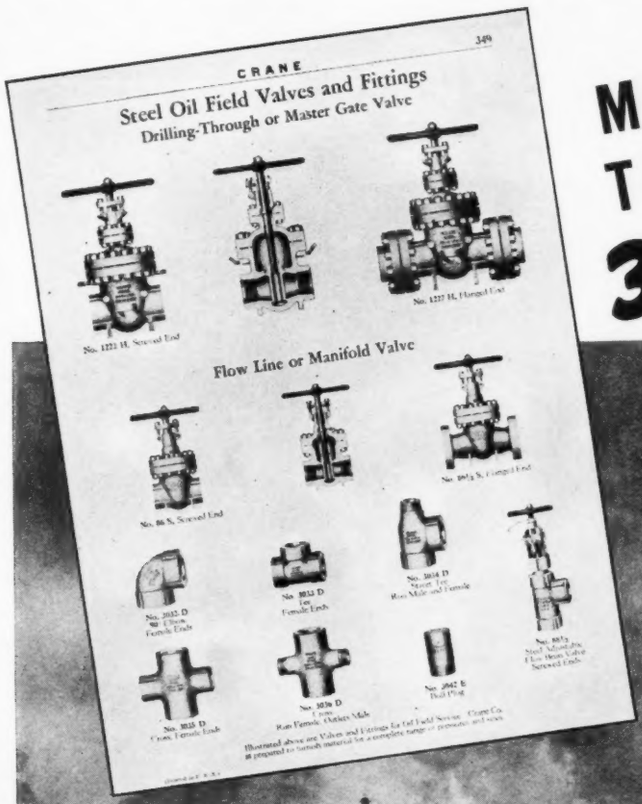
Among "value-minded" operators who have made such comparisons Parkersburg Tanks are the outstanding favorites. Many of the features they offer are found in no other tank on the market . . . and each one makes a good tank better and saves you money. In addition our nation-wide warehouse system means that replacement parts and tank service are no farther away than your telephone. Figured in terms of time and convenience this "on the spot" service is saving operators hundreds of dollars.

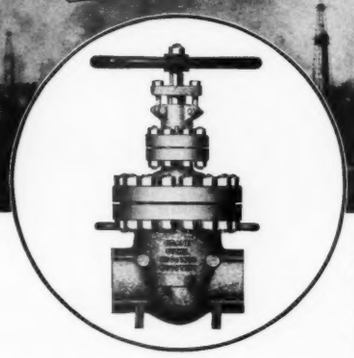
Why not start today and buy your tanks on the basis of measured value? It can't cost you any more and will save you money and assure you better tanks. Begin by asking your Parkersburg representative for our complete tank catalog. It covers both Steel and Wrought Iron in every size and type.

THE PARKERSBURG RIG & REEL COMPANY
Parkersburg, West Virginia

PARKERSBURG
BOLTED TANKS

MAINTAINS ITS TIGHTNESS AT 3000 POUNDS





Crane No. 1222-H Drilling-Through or Master Gate Valve. Other Crane valves and fittings for oil service completely described in the Crane No. 52 Catalog.

● Crane No. 1222-H Chrome-Nickel-Alloy Cast-Steel Drilling Gate Valves give years of satisfactory service under the most severe service conditions.

Every precaution is taken in their design, manufacture and testing to insure a high factor of safety (6000 lbs. test) and long sustained *tightness*. Absolute tightness at the bonnet joint is insured by an unique construction which permits the joint to be taken down and put together again as often as necessary, using the same gasket without danger of leakage. The extra-deep stuffing box may be repacked when valve is open and under pressure. Solid wedge disc of hard, non-corrosive Nitralloy is accurately guided and touches seat only at moment of closing.

The advanced design, precision, careful testing and close control of materials and workmanship that accompany the making of Crane valves and fittings for the oil industry are the reasons for their maintained tightness and dependability. Stocks in all oil centers.

CRANE

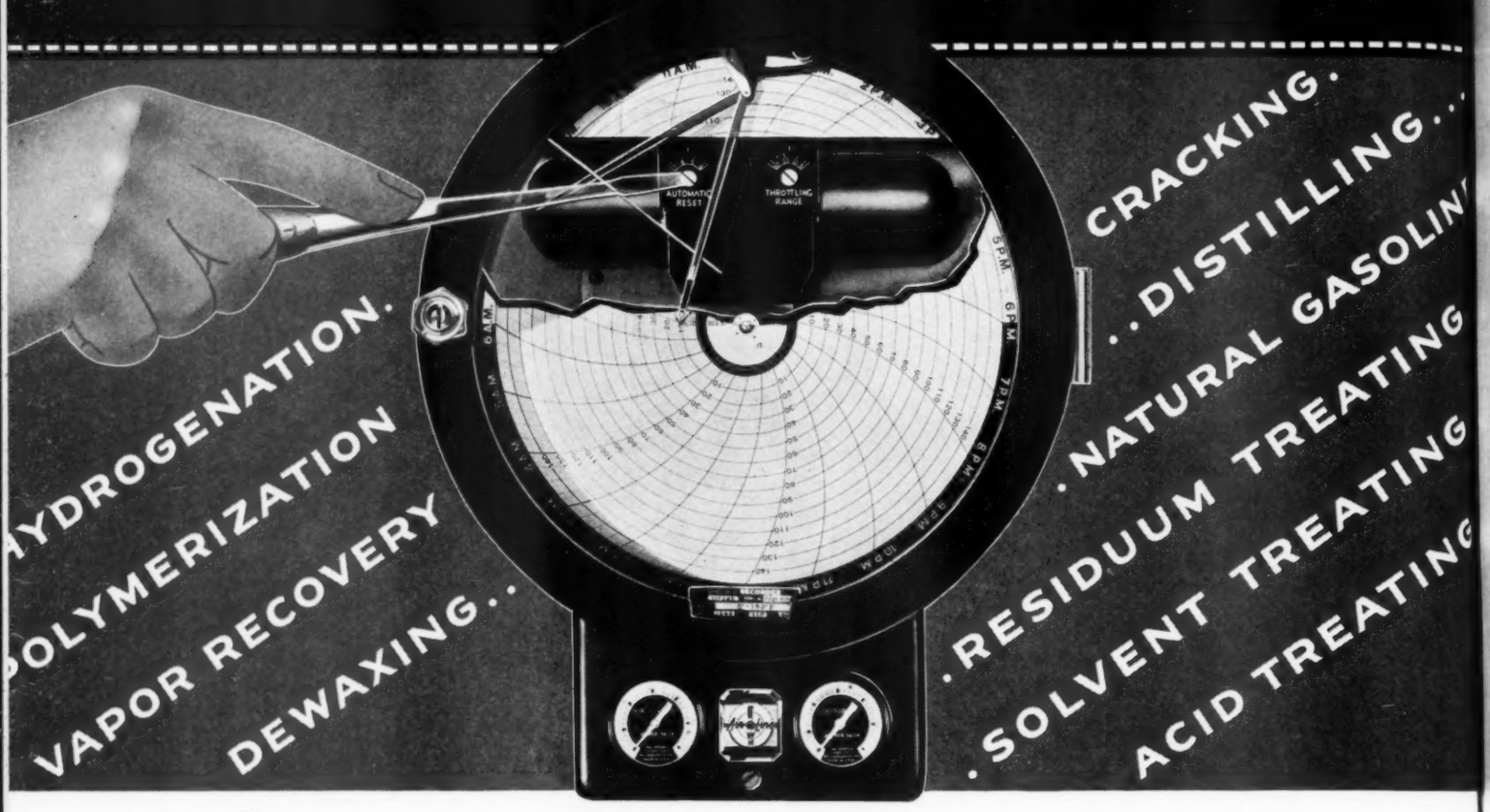
CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVE., CHICAGO, ILL. • NEW YORK: 23 W. 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

BROWN Air-O-Line

Simplifies TEMPERATURE CONTROL



"Tuning In" Gives Greater Accuracy

In the petroleum industry, where temperature plays a vital part in production—you can't "temporize" with temperature. Modern production methods demand that temperature be kept "on the mark"—when fluctuations either high or low mean a loss.

Brown Air-O-Line Thermometer Controllers can be "tuned in" to process control as easily as dialing a radio. This simplicity not only gives you greater accuracy, but outstanding performance. The use of Graduated Dials for both "Throttling Range and Automatic Reset" are revolutionary developments in air-operated controllers. They encourage process operators to seek the "best possible" in control—by putting the "best possible" within reach.

A slight turn of the screw-driver enables the operator to accurately "tune-in" to specific temperature control requirements without "guesswork" or taking the instrument off control.

Air-O-Line not only simplifies temperature control, but it "Recognizes," "Analyzes," and "Corrects" for any departure from the desired control point, without "hunting," "cycling," "drifting" or "shifting" of the control setting.

To put Air-O-Line in operation, all that is necessary is to set the control index at the desired point, "tune-in", Throttling Range and Automatic Reset—Air-O-Line then becomes fully automatic.

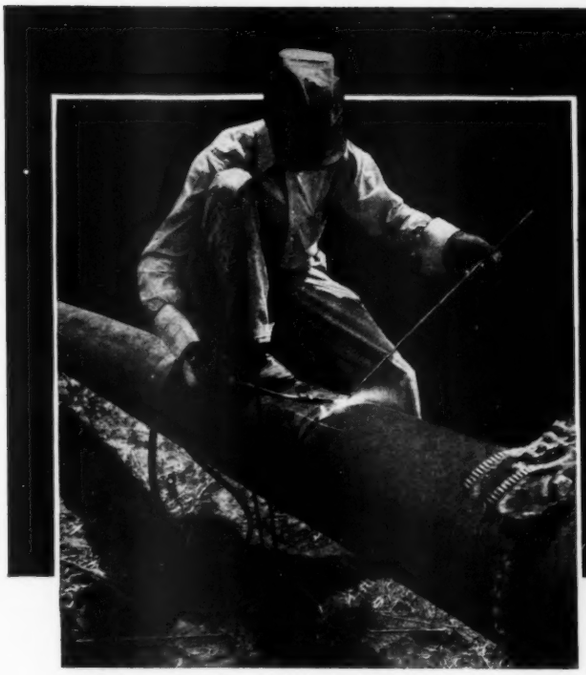
The Calibrated Control Index, "Throttling Range and Automatic Reset" Dials are easily accessible. There is no need to dismantle the instrument to obtain the desired control results. Only Brown Air-O-Line gives you these advantages.

Brown Air-O-Line is more than a controller—it is a system of control that will aid you to reduce costs, improve quality and speed up production.

Catalog No 8901 fully describes the outstanding features of Air-O-Line—the modern temperature controller. Write for a copy. The Brown Instrument Company, *a division of Minneapolis-Honeywell Regulator Co.*, 4488 Wayne Ave., Philadelphia, Pa. Canadian factory: 117 Peter St., Toronto. European Address: N.V.N. Minneapolis-Honeywell Co., Wydesteeg 4, Amsterdam-C.

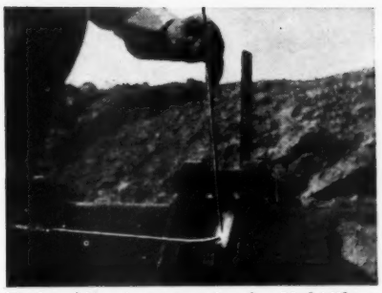
BROWN *Air-o-Line* THERMOMETER CONTROLLERS

CATCHING PERFORMANCE WITH SIMPLICITY

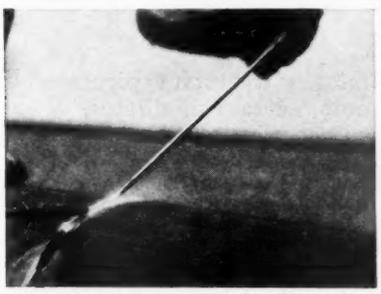


MULTI-FLAME LINDEWELDING *makes* DEPENDABLE WELDS

Multi-Flame Lindewelding on the Texas Empire pipe line in Kansas.



Tack-welding in preparation for Multi-Flame Lindewelding.



Close-up of Multi-Flame Lindewelding, showing preheating flames and main flame.

WITH Multi-Flame Lindewelding, you can develop the full strength of the pipe itself in every weld, even where the tensile strength is as high as 110,000 lb. per sq. in.

Multi-Flame Lindewelding utilizes a backhand technique and a special multi-flame head which preheats the vee and post-heats the completed weld. This assures thorough bonding of the base material with the weld metal and makes the Lindeweld unusually tough and ductile.

Strength, toughness and ductility are uniformly obtainable in the Multi-Flame Lindeweld even under varied field conditions. Multi-Flame Lindewelding has been proved by results on more than 6,000 miles of pipe lines.

Why not have the benefits of Multi-Flame Lindewelding on your next project? Help in organizing and training for this better method is available from a Linde office near you. Write or phone for complete information. The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, New York and principal cities.

Everything for Oxy-Acetylene Welding and Cutting

LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES FROM UCC LINDE UNION CARBIDE

DEPARTMENT OF GEOGRAPHY
THE UNIVERSITY OF MICHIGAN

Lunkenheimer Valves for Corrosive Service

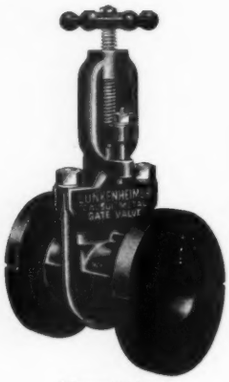
"SA" Globe Valve

"Causul" Metal Indicator Cock

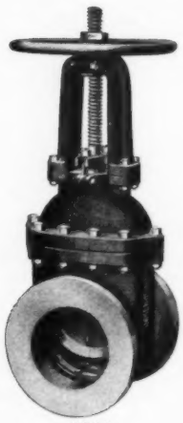
All-Iron "Ferrenewo" Check Valve

All-Iron "Ferrenewo" Globe Valve

All-Iron "King-clip" Gate Valve



"Causul" Metal Gate Valve



"SA" Gate Valve

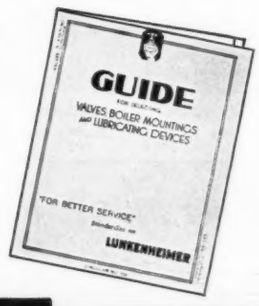
All-Iron Gate Valve

All-Iron Globe Valve

In oil refineries are many corrosion resistance problems for which Lunkenheimer All-Iron, "Causul" Metal and "SA" Valves are particularly adapted.

They have been used successfully and economically for such typical services as sludge acids, recovery acids, wash liquors, certain distillates, sour crudes, gases and gasoline, sulphuric acids and caustics.

The valves illustrated and many more are shown in the Guide to Better Service. The "Causul" circular lists numerous successful applications based on specific tests. This literature will prove a valuable aid in solving your corrosion resistance problems. We will gladly send copies on request.



THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON
PHILADELPHIA SAN FRANCISCO
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

BOILER MOUNTINGS — LUNKENHEIMER VALVES — LUBRICATING DEVICES

28-48A-91

SURE-FOOTED TRACTION

. . . under all road conditions because of FWD

Controlled Power

The scientific *power* and *load* distribution over front and rear wheels of the FWD Truck spells Controlled Power — power to move the truck under all conditions and proper distribution of weight to provide balanced, sure-footed traction on variable roads . . . For each driving wheel of the FWD is a worker — alive with power — with 88.2% of the engine power put to actual work . . . The FWD is the original four-wheel-drive truck—ruggedly constructed, having reserve power and embodying the highest perfection of the four-wheel-drive principle . . . It has a wider range of application, is the safest truck on the highways at high speeds, and operates economically showing definite savings in gasoline, tire wear, and maintenance costs.

Let us give you full details of FWD Controlled Power and what it means to you on your work. Write today.

THE FOUR WHEEL DRIVE AUTO CO.
CLINTONVILLE, WISCONSIN
Canadian Factory:
Kitchener, Ontario

Greater Safety The distinctive front axle location results in power, as well as load being distributed to all four wheels. This gives the FWD sure footing on slippery pavements, in congested traffic, and when going around curves.

Greater Dependability — Reserve power, rugged construction throughout, and true application of the four-wheel-drive principle insure continued DEPENDABILITY under all conditions.

Faster Service — FWDs with their powerful engines, wide range of gear ratios and four-wheel traction cut down trip-time by being able to "make the hills, curves and poor going faster than average trucks. No need to over-speed on the stretches."

Wider Range of Operation — Four-wheel traction enables the FWD to handle its regular hauling job easily and do the tough jobs as a matter of course.

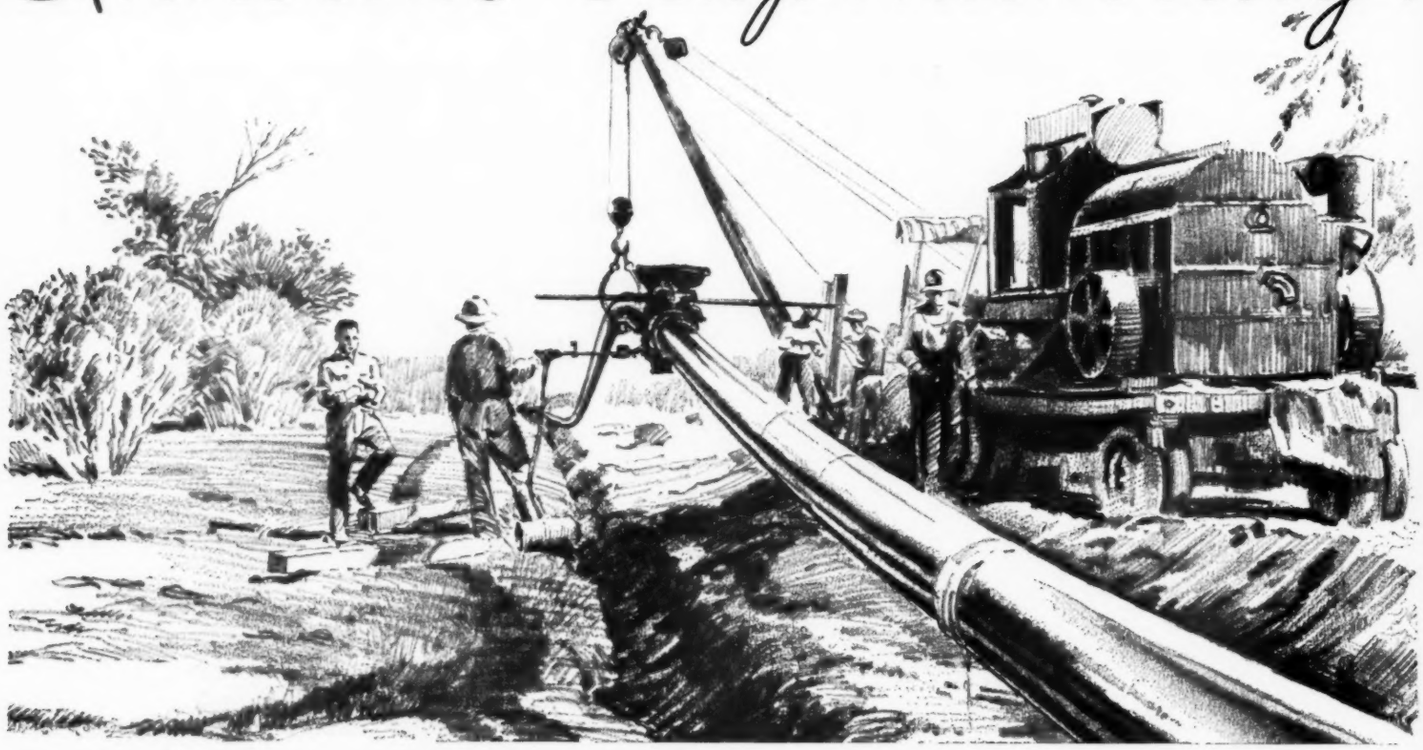
Greater Economy of Operation — Definite savings are made in gasoline, tire wear, maintenance cost, and other "out-of-pocket" expenses. This is the result of equal distribution of power and load and scientific four-wheel-drive construction throughout.

FWD TRUCKS

1½ TO 15 TONS

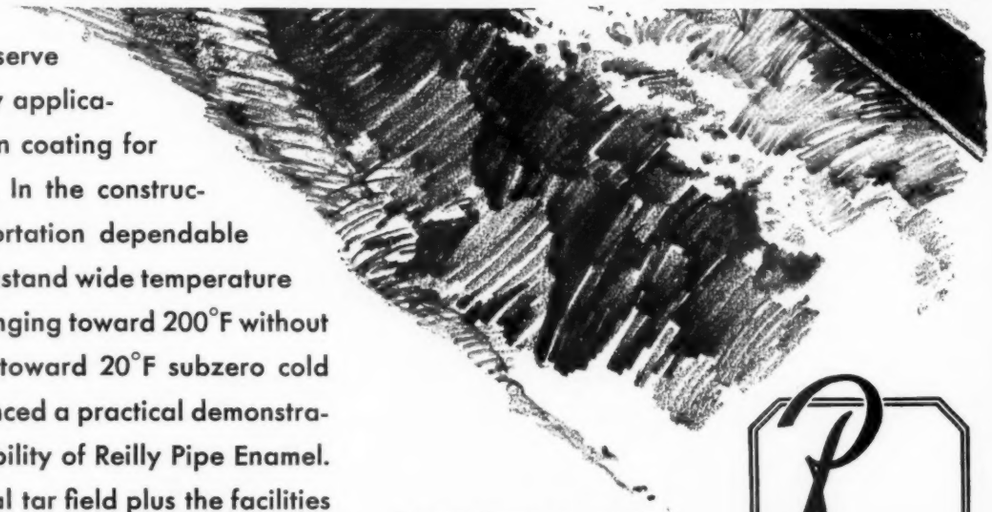
THE SAFEST TRUCK ON THE HIGHWAY

Inherent Dependability



REILLY PIPE ENAMEL & PRIMER

Reilly Pipe Enamel and Primer serve with equal dependability in every application in which a reliable protection coating for steel pipe or plate is demanded. In the construction of pipe lines for oil transportation dependable coatings must be provided to withstand wide temperature variations—high temperatures ranging toward 200°F without sag—low temperatures ranging toward 20°F subzero cold without chipping. Here is experienced a practical demonstration of the quality and dependability of Reilly Pipe Enamel. Four decades of service in the coal tar field plus the facilities of 15 modern plants provide a background of dependability upon which users of Reilly Products rely with confidence.



This sketch illustrates the application of Reilly Enamel to pipe lines for oil transportation.

Reilly
COAL TAR PRODUCTS

FOR PIPE LINE PROTECTION PROBLEMS CONSULT REILLY... OUR SERVICES AND FACILITIES ARE YOURS TO COMMAND

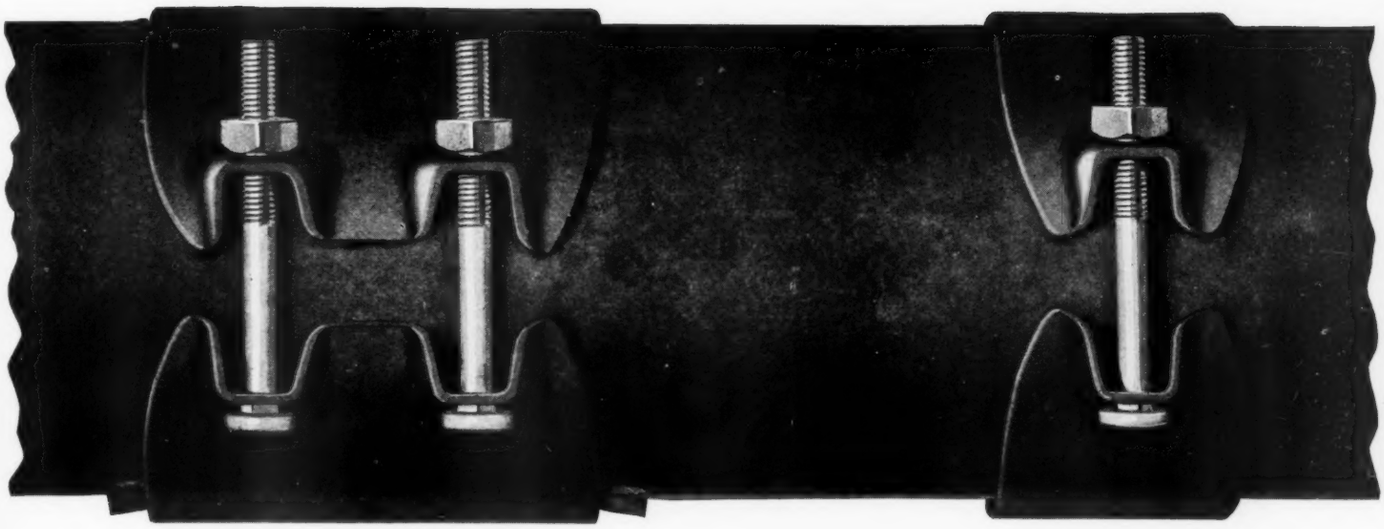
REILLY TAR & CHEMICAL CORPORATION

Executive Offices: Merchants Bank Building, Indianapolis, Indiana

2513 S. DAMEN AVENUE, CHICAGO, ILLINOIS 500 FIFTH AVENUE, NEW YORK, N. Y. ST. LOUIS PARK, MINNEAPOLIS, MINN.

FIFTEEN PLANTS TO SERVE YOU

A FACTORY PRECISION CLAMP AT LESS THAN HOMEMADE COST!!



Single bolt width—3½" wide—complete with rubber cone gasket. Two bolt width—6½" wide—with strip gasket.

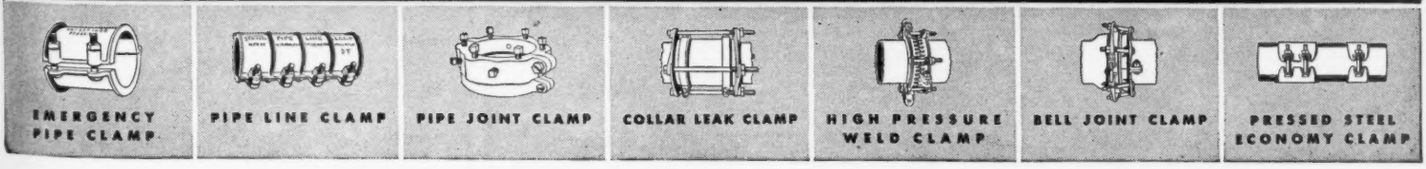
★ **PRESSED STEEL ECONOMY CLAMPS** offer you amazing savings on the repair of badly pitted and corroded pipe lines . . . give you instant, permanent repair. Easily, quickly applied. Later, if desired, the half covering leak can be welded on as a patch.

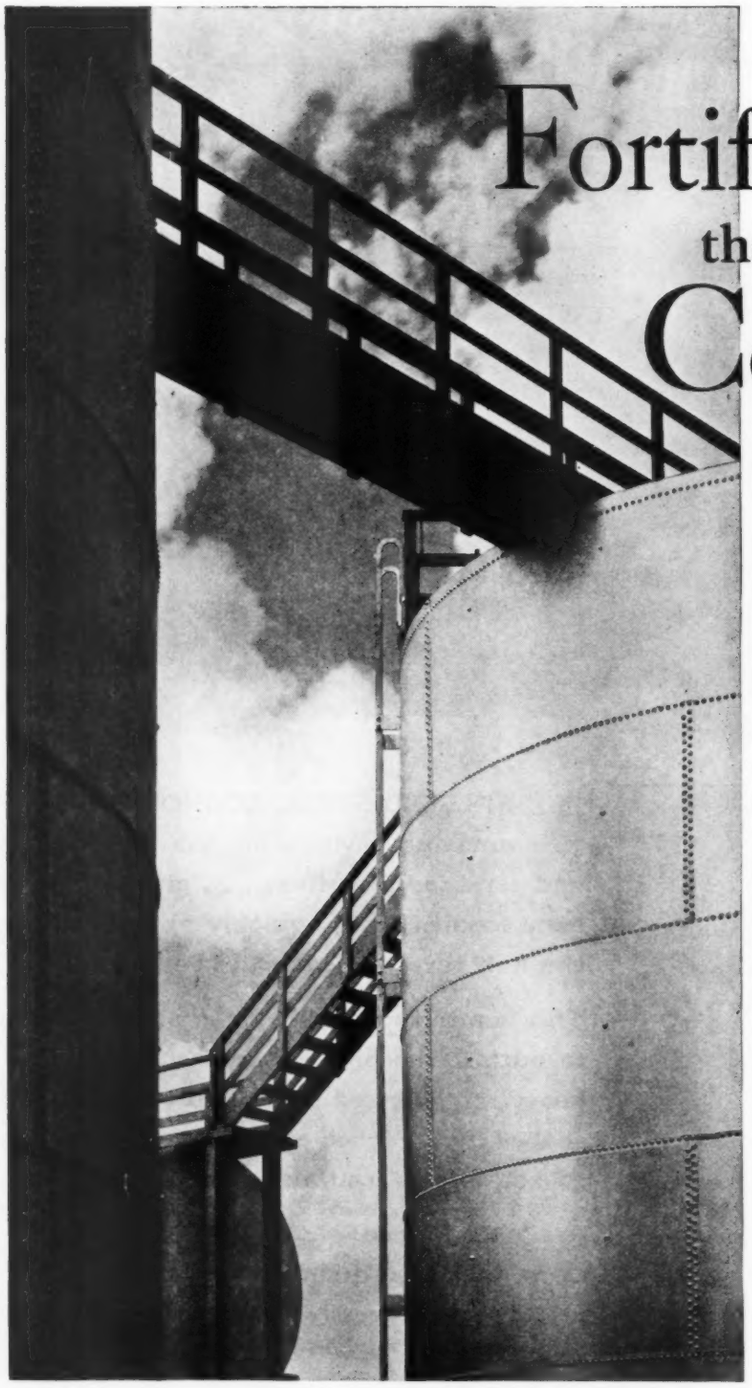
This is a tremendously strong clamp . . . heavy enough to outlast the pipe itself. Formed from 3/16ths thick, heavy, hot-pressed steel plate . . . with integral wedge-shaped lugs. Packed complete with rubber cone or strip gasket, and ⅝" cadmium plated steel bolts.

Available in two widths . . . 3½" and 6½". Many concerns use large quantities of this clamp . . . write for prices and progressive schedule of discounts.

COMPLETE SKINNER CATALOG ON REQUEST

M. B. SKINNER CO. *Est. 1898* SOUTH BEND, IND.





Fortify against the action of Corrosion before it starts

YOU can impede the action of corrosion on your tanks while they're still on the drafting table, if you decide to have them made of USS Copper-Steel Sheets.

Tests have definitely shown that when copper is properly alloyed with steel the resulting alloy successfully retards atmospheric corrosion. The American Society for Testing Materials is authority for this statement, proved under widely varying conditions.

When you want corrosion resistance at nominal cost, specify USS Copper-Steel Sheets for your tanks, drums, roofing and siding, culverts and flumes. These sheets are uniformly made from the finest materials by skilled workmen.

U·S·S *Copper-Steel* SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION · *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY · *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY · *Birmingham*
United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

When in need of heat transfer equipment investigate the record and facilities of this organization for designing and speedily turning out large quantities of fabricated materials.

Kellogg Heat Exchanger units are built according to the A. P. I. A. S. M. E. codes. All welds radiographed.

Hundreds of thousands of square feet of Kellogg Heat Exchanger surface are installed in the leading refineries of this country and abroad.

THE M. W. KELLOGG COMPANY · JERSEY CITY, NEW JERSEY · 225 BROADWAY, NEW YORK
Los Angeles: 1031 South Broadway Houston, Texas
Chicago: 1 La Salle Street Tulsa: Philtower Building

KELLOGG

Pressure vessels "Masterweld" for the Power, Refinery and Chemical Industries. Power Plant and Industrial piping. Heat Exchangers, Radial Brick Chimneys, Plastic Refractories. Cross, Holmes-Manley, de Florez and Tube and Tank cracking units. Gas Polymerization Units. Deasphalting, Dewaxing, Solvent Extraction, Acid Treating Plants, Absorption Plants and Pipe Stills.

DEPARTMENT OF GEOGRAPHY
THE UNIVERSITY OF NEBRASKA

Stop worrying about business, Mr. Goodwin. Let CITIES SERVICE help solve your problems with its proved sales plan...It has worked in thousands of cases.

HUNDREDS OF DEALERS SWITCH TO CITIES SERVICE IN LAST FEW MONTHS

GET ON the Cities Service dealer bandwagon that's headed straight to increased business and profits. Hundreds of new dealers have switched to Cities Service since the first of the year because Cities Service has offered them the industry's most unusual sales plan... a proved sales plan that is producing extra profits for dealers everywhere.

No other oil company offers the complete, distinctive plan Cities Service offers its dealers.

It is a plan that will make you the most-talked-of dealer in your neighborhood... a plan backed by a record of proved success.

Ask to see this plan, which is explained in full in the Cities Service PROFIT ImPROVER. Write, wire or phone today to the Cities Service marketing company nearest you. Don't struggle hopelessly with your problems. Let Cities Service experts help you solve them, as they have for so many others. Act today.

MAIL THIS COUPON TODAY!

CITIES SERVICE
Room 733, 60 Wall Street, New York City

Gentlemen: Without obligation on my part, please send representative to show me the plan outlined in your PROFIT ImPROVER.

*Name*_____

*Address*_____

*City and State*_____

CITIES SERVICE OIL CO. Chicago, Ill. | CITIES SERVICE OIL CO. Milwaukee, Wis. | CITIES SERVICE REFINING CO. Boston, Mass. | EMPIRE OIL & REFINING CO. Tulsa, Okla.

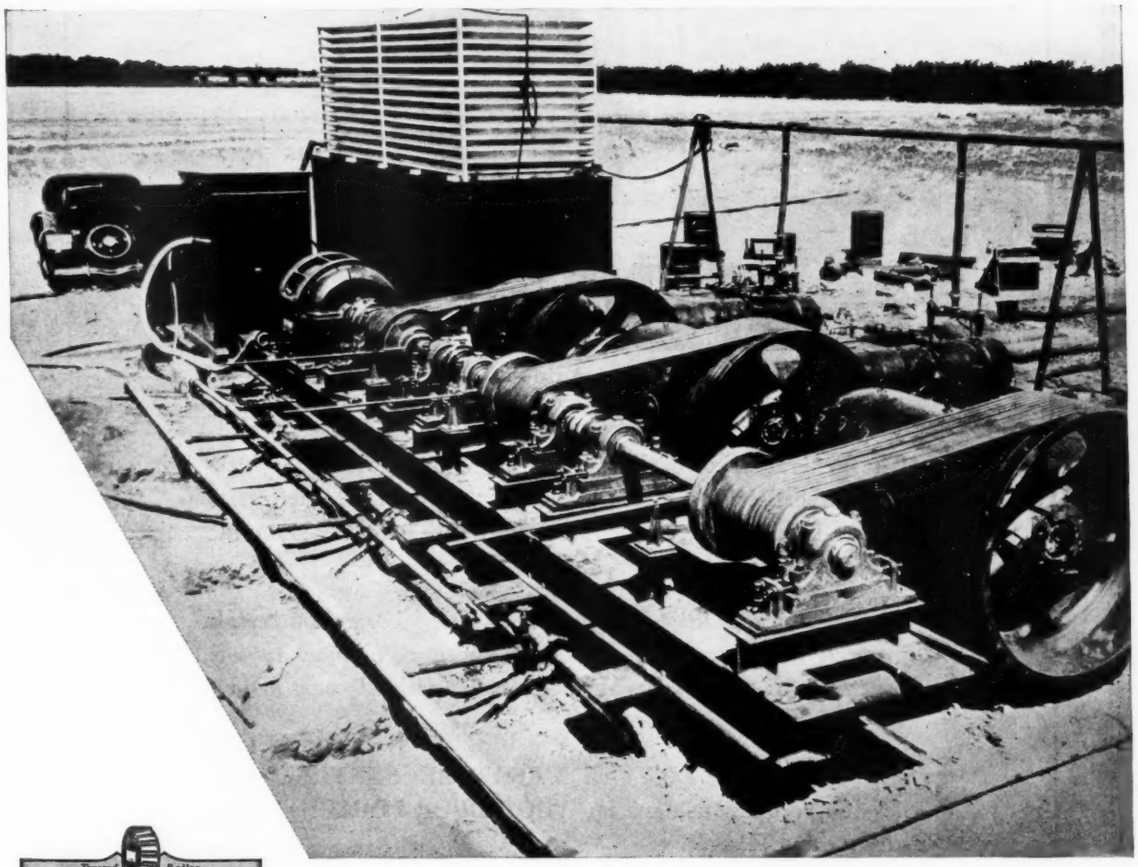
CITIES SERVICE OIL CO. Detroit, Mich. | CITIES SERVICE OIL CO. Cleveland, Ohio | CITIES SERVICE OIL CO. Philadelphia, Pa. | CITIES SERVICE OIL CO. Kingston, N. Y.

CITIES SERVICE OIL CO., LTD., Toronto, Ont., Canada | LOUISIANA OIL REFINING CORP., Shreveport, La.

RADIO CONCERTS... *every Friday at 8 P.M. (E.S.T.) WEAF and 45 associated N.B.C. stations.*

CITIES SERVICE OILS AND GASOLENES

DODGE-TIMKEN PILLOW BLOCKS IN THE OIL FIELDS



Tapered Roller TIMKEN BEARING EQUIPPED

A symbol of quality for any piece of equipment with which it is associated

Apart from the general use of Timken Bearings as integral parts of oil field equipment such as engines, draw works, rotaries, swivels, pumps and compressors, there are many places where they are used advantageously as individual units.

Such a condition is shown in the above photograph of an electrically-driven rotary drilling transmission with the drive shaft mounted on Dodge-Timken Special Duty (Adapter Type) Pillow Blocks.

These Timken-equipped pillow blocks provide proper support for the shaft; protect it against friction, wear and radial-thrust loads; hold it in correct and constant alignment; save power and lubricant.

Furthermore, the bearings are completely enclosed. Moisture and dirt are kept out —lubricant is kept in. This is another valuable advantage, especially where equipment is required to operate in the open.

Wherever you use pillow blocks it will pay you to use Timken-equipped pillow blocks.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *TAPERED ROLLER* BEARINGS

at MINUS 75° F.

. . . . . decreased resistance to shock or impact is called "Low-temperature Embrittlement".

The general effect of low temperature on the ordinary tensile properties is to increase slightly the tensile strength, fatigue resistance, and elastic properties with slight loss in the per cent elongation.

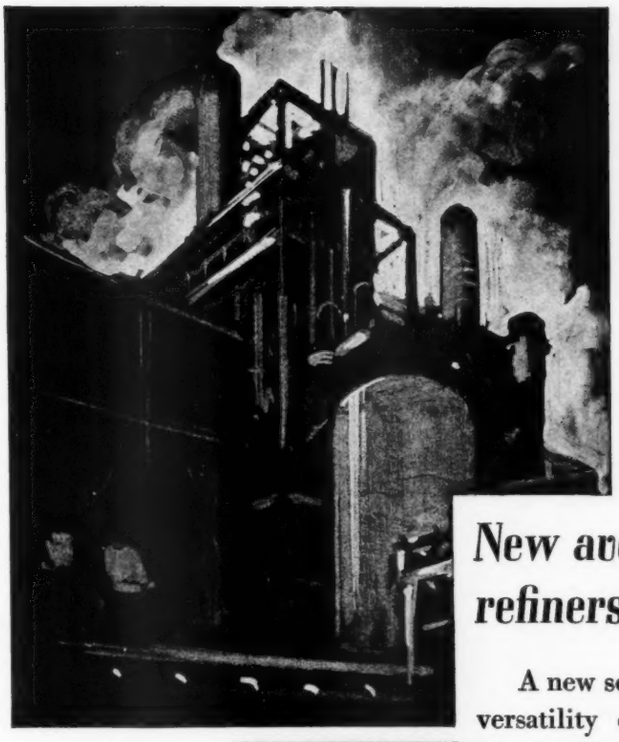
Thoroughly deoxidized, fine grain, Drop Forged materials properly heat treated are ideal for resistance to shock at low temperatures and lend ready response to welded construction.

CONTINUED SATISFACTORY OPERATION UNDER THE MOST SEVERE LOW TEMPERATURE SERVICE justifies the recommendation for VOGT DROP FORGED Valves, Fittings and Flanges.

Henry Vogt Machine Co., Inc., Louisville, Ky.

Vogt

VOGT DROP FORGED STEEL—For better Valves, Fittings and Flanges



THERMAL POLYMERIZATION

New avenues of profit are open to refiners and natural gas operators

A new source of profit is open through the versatility of the Thermal Polymerization Process in converting both refinery by-product gases and natural gases to premium grade motor fuel.

Thermal Polymerization converts both saturated and unsaturated gaseous hydrocarbons to motor fuel of high octane blending value for both refiners and natural gas plant operators. The increased recovery of valuable products is naturally reflected in the operating profits.

Thermal Polymerization plants now in operation are daily proving the economic advantages of this versatility.

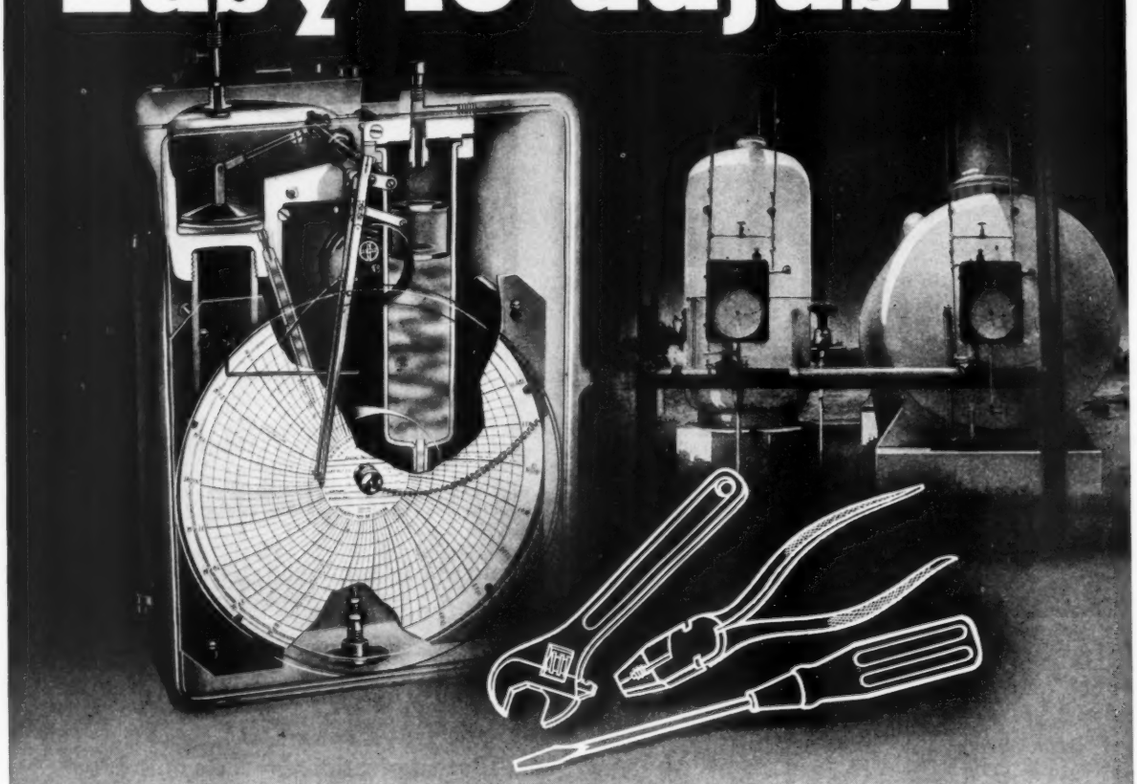
The facilities of this organization and its agent, The M.W. Kellogg Company are available to refiners and natural gas plant operators for analysis and solution of their plant gas problems.

Licenses granted under United States and Foreign Patents by The Polymerization Process Corporation.

THE POLYMERIZATION PROCESS CORPORATION

15 EXCHANGE PLACE • JERSEY CITY, N. J.

Easy to adjust



out in the field

LET'S SEE HOW EASY it is to adjust a Westcott Orifice Meter! The door of the dust-and-moisture-proof aluminum case merely is swung open . . . exposing pressure spring, clock, chart, and recording mechanism. Or, by speedily removing the low-pressure chamber cover of the forged-steel differential gage body, the entire interior is accessible . . . without loosening a single connection that affects accuracy. Adjustments do not interfere with any of the working parts . . . few in number and simple in design, despite their many features and refinements.

Comprehensive literature describes the expense-saving Westcott Orifice Meters and Flowmeters . . . clearly defines their applications. Specifications on the popular new Round Case Indicating Flowmeters also will be mailed on request.

AMERICAN METER CO. MEASUREMENT ENGINEERS CENTENNIAL 1836-1936

343

AMERICAN METER COMPANY
INCORPORATED
Measurement and control of Gas, Oil, Steam, Air and Liquids
METRIC METAL WORKS *ERIE, PENNSYLVANIA*